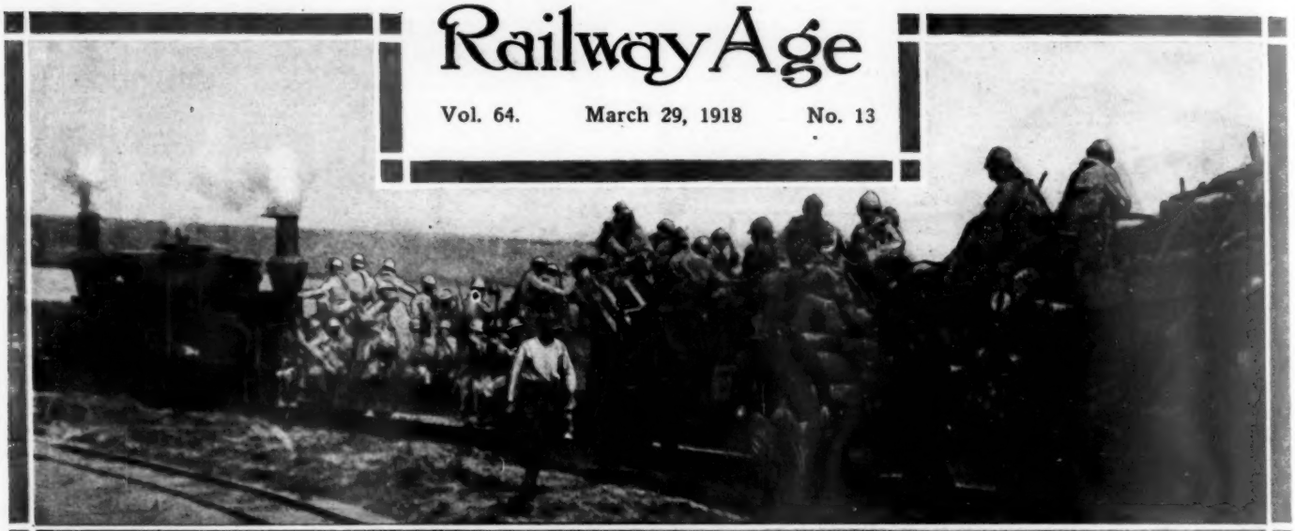
Railway Age

Vol. 64. March 29, 1918 No. 13



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Published every Friday and daily eight times in June by the

Simmons-Boardman Publishing Company, Woolworth Building, New York

EDWARD A. SIMMONS, *Pres.* L. B. SHERMAN, *Vice-Pres.* HENRY LEE, *Vice-Pres. & Treas.* M. H. WIUM, *Secretary.*

CHICAGO: Transportation Building. CLEVELAND: Citizens Building. WASHINGTON: Home Life Building.

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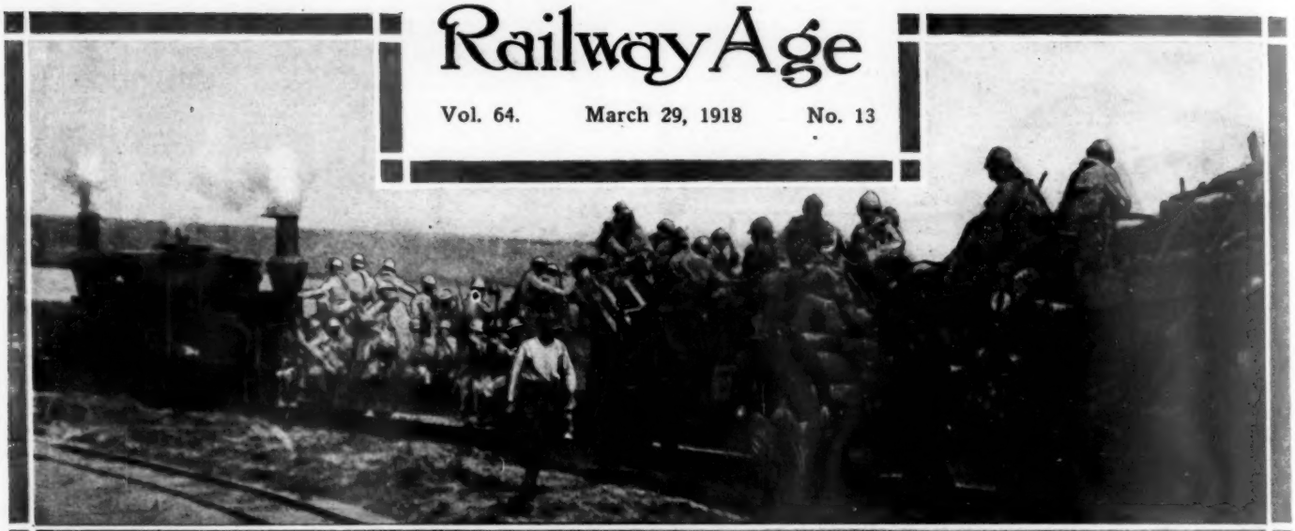

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The Message of the Torch

EDITORIAL
Railway Age

Organizing the Supply Industry

CONCERNS ENGAGED in the manufacture and sale of railway equipment and supplies suddenly have come to a realization that they have many important problems and many important interests in common. The purpose of the meeting to be held at the Hotel La Salle, in Chicago, on April 8, under the auspices of the Railway Business Association, is to so reorganize this association as to make it an agency for helping effectively to solve these common problems and promote these common interests.

Two things, at least, are essential to fitting the organization to accomplish these purposes. One is to make a concise, simple statement of what it ought to try, and is going to try, to do. The other is to provide means and machinery suitable and adequate to attaining the objects sought.

It ought to be made clear that the sole purpose of the organization is going to be to protect the rights and further the legitimate interests of the railway equipment and supply industry. Heretofore the association has devoted itself to trying to bring about better relations between the railways and the public. This has been the right and desirable thing to do.

It has been well done, but conditions have changed. Government control of railways has been adopted. The supply companies consequently find that they have not merely the railways, but the government itself to do business with. Furthermore, as a result of the war, they have got a large amount of business abroad which they ought to make concerted and strenuous efforts to hold and increase.

Therefore, while the supply companies should take even more interest than ever in the solution of the railroad problem, they should meet and deal with several problems which are peculiarly their own. They can best help the railways and the country, as well as themselves, by organizing primarily to protect their own particular rights and promote their own particular interests.

The railroads and the public are greatly indebted to railway supply interests for the improvements which they have made possible in efficient and economical operation, as well as for the cultivation of better relations between the railroad and the public. Undoubtedly, however, the railway supply industry will be in a position to do still greater things for the public and the railways.

The means to be used ought not to be narrowly defined at the start. It will be enough for the present to set forth that the railway equipment and supply interests are organizing to protect their rights and safeguard their legitimate interests by every legitimate means. What is needed is a flexible, effective fighting organization; the exact methods it will be desirable to use will become clear only in the course of developments.

Doubtless the exact way in which the association should be reorganized in order to have the maximum effectiveness will be thoroughly discussed at the meeting in Chicago; but here are a few suggestions:

(1) Make the constitution simple, concise and broad, avoiding detail statements of policies which no one is wise enough now to formulate.

(2) Assign broad questions of policy, such as export trade, trade acceptances, relations with the government, education of public opinion regarding the railway problem, etc., to committees with large power for quick and decisive action. In other words, the new organization should take the form of a board of trade. The cardinal defect of many associations is that they do not give to those to whom they assign specific tasks the authority and opportunity necessary to accomplish them.

Every concern or individual engaged, even though on a small scale, in the making or selling of railroad equipment, materials or supplies should be represented at the meeting in Chicago, and there should be full discussion of all the important questions in which the railroad supply industry is so vitally interested.

The Equipment Situation

The holders of all classes of railroad securities are vitally interested in the adequacy of the equipment which the company owns. Many railroad companies for the last few years have not been buying new equipment in sufficient quantities to replace worn-out equipment and adequately to provide for a normal growth in traffic from year to year. In many cases making public this fact would not have changed the policy of the management because the company was already making purchases on as large a scale as its net earnings and credit would justify. On the other hand, even though security holders may be powerless to remedy a deplorable situation, they should be kept fully informed by the management as to what the facts actually are. All companies are required to report in some detail an inventory of their equipment to the Interstate Commerce Commission. Some include a detailed inventory in their annual reports to stockholders. A good many others fail to do so. While the roads were operating under the control of the Railroad War Board, L. F. Loree, president of the Delaware & Hudson, and chairman of the eastern department of the War Board organization, urged that all Class A roads be requested by the War Board to include a detailed inventory of equipment in their annual report. Before action was taken by the board, the government took control, but it is more important than ever that railroad security holders be kept informed as to each company's ownership of equipment. Under government orders, not only freight cars but also passenger cars and locomotives will be operated more or less away from the home roads. The failure to provide new equipment by a particular company might not be apparent in the operating figures, as shown in the company's annual

report, unless a detailed inventory is given. Each railroad president ought, therefore, to make it his duty to see that during the period of government control his stock and bond holders are kept fully informed, so that when the roads are returned to their owners there may be no unpleasant surprises. Copies of a suggested inventory are reproduced elsewhere in this issue.

The Nation Must Have Better Coal

What has become of our American efficiency that both the Bureau of Mines and people in general should find it necessary to lay such stress upon the exceptionally poor grade of fuel that is being given the railways to haul and our industries to use. Now as never before should our industries have the best coal obtainable and our railways be relieved of hauling more than 50,000,000 tons per year of worthless dirt and slate. E. G. Bailey in a lecture recently before the Johns Hopkins University, which is abstracted elsewhere in this issue, refers to the large percentage of ash and impurities in the coal we are now receiving as "sand in the bearings of transportation." And such it is, clogging our transportation system with 1,000,000 more car loads a year than if the normal attention was given to cleaning the coal. The remedy suggested by Mr. Bailey is to give a premium to those mines which produce the best coal. The consumers would be glad to pay it, for the loss in efficiency and the increased cost of maintenance caused by poor coal, costs more in the long run than if a higher price were paid for the better grade of coal. Price fixing has resulted in the working of mines that had previously been abandoned on account of the poor grade of coal produced. It has eliminated competition and with it, the incentive for the production of good coal. More attention must be paid to the quality of the fuel.

Postal versus Telephone Service

Postmaster General Burleson has recommended and Congress is considering the government acquiring the telephone exchange in Washington, D. C., and having it operated by the postoffice department. The *Railway Age* recently has had much experience with both telephone and postal service in, and into and out of Washington. We are also familiar with the experience of many other people with them. The postal service is so much worse than the telephone service that to suggest having the telephone business handled by the postoffice department sounds like irony. The local mail service in Washington is very poor. The movement of mails in and out is slow and uncertain. When, last winter, train service was demoralized, the postoffice department blamed the railways. Now trains to and from Washington are running about normally, and the mail service is still almost as bad as ever. This applies to the first class as well as to other classes of service. The delays to all classes of mail between New York and Washington are unprecedented; and meantime the long distance telephone service between these cities is just as good as ever. The *Railway Age* is mailed in New York on Thursday. The postal department did not deliver the issue mailed in New York on Thursday, March 7, to subscribers in Washington until Wednesday, March 13; and it did not deliver the issue mailed in New York on March 21 to subscribers in Washington until March 27. Trains run between New York and Washington in five hours; but it takes six days for our "efficient" postal department to handle second class mail between the two points! The telephone company, the railways and the postal department have had difficult problems presented to them by the great increases of population and of activities of many kinds at Washington. According to our experience and observation the postal department has shown far less capacity for promptly and satisfactorily solving these problems than either the telephone company or the railways. The postmaster general should be devoting his time to restoring the service of the postal department to the basis of comparative efficiency it was on before he took charge instead of seeking to add other services whose efficiency also probably would be reduced under his management.

The Railroad Man's Duty in This Hour of Peril

THE GREAT GERMAN OFFENSIVE has been launched. It looks as though the Kaiser has elected to risk all on one determined effort to smash his way through the lines of the Allies on the Western front. America and those with whom she has joined forces are being subjected to the acid test. The victory will not be gained without terrible toll in men and in money. Without money—and money in huge sums—the men cannot be supplied. Courage is needed at home as well as in the trenches. The whole-hearted cooperation and earnest endeavor of every citizen is necessary at this time.

A third issue of Liberty Bonds is announced for April 6. It should be a point of honor for every patriotic American to see that subscriptions exceed the amount demanded, however large this may be.

Railroad officers have a particular duty and privilege in this matter. They have been trained to direct and coordinate. They know the value of team work. If anyone knows the public, it is the railroad man who serves the public. He knows his fellow Americans in all their moods. He has had experience with more delegations than any government official. He has seen Americans irate and difficult; he has coped with Americans of every character and disposition. Now is the time for the railroad man to turn his experience to the good of his country. If the railroad officers of the country take off their coats and determine to make this Third Loan a grand success, they can come very near to doing it.

It is not sufficient that they should subscribe liberally themselves. Each must constitute himself a missionary to spread the gospel of this loan for Liberty. He must make the personal appeal in season and out of season. He must use every means of advertising that he controls. All of us can gain inspiration and increase our zest of living by entering with our whole souls into the campaign. It is well that we should get away for a time from the strictly sordid aspects of life.

As missionaries we must be prepared to be educators. All around us are hundreds and thousands who have been able as a result of conditions greatly to increase their earning power beyond all records of the past. Few of these know anything of investments. They should be taught what Liberty Bonds are, what they mean as a method of saving, as well as what they mean in their higher significance as contributions for the protection of those who are offering their lives that the cause of freedom may prevail.

All railroad men know what service means. All know the meaning of difficulties and how they are to be met and overcome. The greatest opportunity for service that can come to those who stay at home is offered by this Liberty Loan campaign; the best chance to tackle a really difficult task and see it through presents itself.

"Over there" are hundreds of boys from all branches of

the railroad service. Let us think of them. Let us make others think of them. Let us see that these others do more than think of those who but yesterday were working beside them. Money is needed to feed and clothe and protect these boys. It should pour in from every railroad centre in a great flood.

United States Standard Cars

WITHIN THREE MONTHS from the time of taking the office of director general of the railways of the United States, Mr. McAdoo has approved designs for standard freight cars. Specifications have been drawn and drawings made for bodies of a 40 and 50 ton steel frame, single sheathed box car (the designs are identical for both cars, different trucks being used); a 40-ton steel underframe, double sheathed box car; a 50-ton steel high side gondola; a 50-ton composite high side gondola; a 70-ton low side steel gondola; a 50-ton hopper car and a 70-ton hopper car. There are three designs of trucks to be used on these body designs, having capacities of 40 tons, 50 tons and 70 tons.

A study of the specifications which appear elsewhere in this issue indicates that the government's standardization program has been along broad and rational lines. Adequate strength and interchangeability of parts have been given careful consideration. The M. C. B. standards have been used to a large degree and options have been left for detailed parts of different designs provided they are made to fit the limiting dimensions and to conform to the strength requirements. This should be of particular interest to the Railway Business Association which has sought so earnestly to keep the field open for further development of the special appliances that form a vital part in the construction of railway equipment. There are, of course, certain specialties which cannot be used on this equipment, either because they do not measure up to the strength or dimension requirements, or because the committee deemed it inexpedient to include them in the designs. For instance, only the wrought steel wheel is to be used on the 70-ton truck. It has been questioned by some engineers whether or not this was expedient. The all-steel roof has been excluded in favor of the outside metal roof laid over the roof boards. To be sure, the all-steel roof is somewhat more expensive than the design specified, but it saves approximately 500 lb. per car in weight. The specialties to be used are to be determined upon when the contracts for the cars are made.

The specifications call for friction draft gears and the M. C. B. standard coupler on all of the cars. Steel ends and outside steel roofs are required for the box cars. The arch bar type of truck frame is permitted on the 40 and 50 ton trucks and the cast steel frame either with the removable journal box or with the journal box cast integral is permitted on all three designs. A definite strength requirement has been made for the cast steel truck side frames, which in some cases will require new designs. The M. C. B. No. 2 brake beam is specified for the 40 and 50 ton trucks and the M. C. B. No. 3 brake beam is required for the 70-ton trucks. Specifications are also given for the paint to be used, for the journal box packing and for the journal box oil.

In so far as it is possible to determine from a study of the drawings, which have only just been released, it is apparent that the railways will be given car equipment of good design and adequate strength. While the weights of the different cars have not as yet been given out, it appears that they will be fairly heavy, which must always be the case where designs are more or less of a compromise. Interchangeability of parts has been given careful consideration. Many parts of the foundation brake gear are common to all cars and various other details of construction are interchangeable. With the care taken to provide limiting dimensions for the various optional material used, there should be little difficulty in properly maintaining the cars. As in the case of any new set of standards, however, the railways will be called upon to provide themselves with new material with which to repair the cars, which will take time and money. This feature will, of course, create some disturbance in the repair forces.

Canadian Pacific

THERE WAS NO INCREASE in freight business on the Canadian Pacific in the calendar year 1917 as compared with the previous year and no increase in the number of passengers carried, although the average passenger journey was about eight miles longer in 1917 than in 1916. The Canadian Pacific earned, however, $13,000,000 more in 1917 than in 1916; the total earnings in 1917 amounting to $152,389,335. In other words, there was a considerable increase in the average rates received for both freight and passenger. The ton mileage average in 1917 was 7 mills and in 1916 6.5 mills. The passenger rate per mile per passenger was 2.03 cents in 1917 and 1.96 cents in 1916.

The increase in rates, however, was not sufficient to offset the higher rate of wages paid and higher costs of material. There was no increase in the amount spent on maintenance of way; the 1917 expenditure being $17,470,000 and the 1916 $17,250,000. It is probably safe to assume, however, that scarcity of men was the limiting factor in the amount spent for maintenance of way.

The increased costs of actually moving the business (transportation expenses) and of maintenance of equipment are rather startling. Maintenance of equipment cost $23,404,000 in 1917 and $18,908,000 in 1916.

Transportation expenses mounted to $53,029,000 in 1917 and $42,385,000 in 1916. Trainmen, enginemen and station agent and despatchers' wages and fuel costs make up the bulk of the transportation expenses. This increase of 25 per cent in these expenses took place, notwithstanding the fact that passenger, freight and mixed train mileage all decreased. Total train mileage in 1917 was $45,333,000, or 3.42 per cent less than the train mileage in 1916.

It is remarkable what progress the Canadian Pacific has made in car-loading and train-loading during the three years of the war. In the fiscal year ended June 30, 1915, the average loading per loaded car was 21.57 tons. In the calendar year ended December 31, 1917, this average was 26.19. In 1915 the average train-load, including both revenue and company freight, was 463 tons. In 1917 the average train-load was 594 tons. When we remember that Canada has raised by the volunteer system 400,000 men and is now to raise another 100,000 by conscription which, in proportion to population, would be equivalent to raising an army of 7,000,000 men in the United States, we get some conception of the handicap of scarcity of labor which the Canadian railways have had to contend with. Increased train-loading without any large change in the average power of locomotives or any considerable grade reduction is a matter of more skillful operation. To show such a marked increase in skill of operation as that on the Canadian Pacific is something that both the Canadian Pacific management and the people of Canada may well feel proud of. The Canadian Pacific management ascribes the better car-loading almost entirely to the success of the company's appeal to the patriotism of shippers. One thing that undoubtedly helped to bring up the average train-load in 1917 was a

reduction of 12 per cent in the mileage made by empty cars.

The principal changes in the character of traffic moved were an increase in the tonnage of flour and a decrease in the tonnage of grain and a very considerable increase in the tonnage of manufactured articles. The following table shows the classification of freight traffic and the quantities of each class moved in 1917 and 1916.

	1917.	1916.
Flour (bbls.)	$13,727,970	$11,119,890
Grain (bushels)	213,340,507	256,106,690
Live stock (head)	2,190,596	2,172,437
Lumber (feet)	3,178,554,667	3,017,964,134
Fire wood (cords)	295,277	289,471
Manufactured articles (tons)	10,148,568	8,871,928
All other articles (tons)	8,788,423	8,487,785

The economies effected in passenger service have been almost as great proportionately as in freight service. The number of passengers carried in the calendar year ended 1917 was 15,462,000 and in 1915, 13,086,000. Passenger car mileage in 1917 totaled 139,842,000. In the fiscal year ended June 30, 1915, passenger car mileage totaled 130,805,000; but the 1915 mileage was nearly 17 per cent smaller than 1914 mileage. In other words, curtailment of passenger car mileage was begun almost immediately after the outbreak of the war.

In 1916, the Canadian Government and the Canadian Pacific had outlined a plan under which the Canadian Pacific was to issue something less than $200,000,000, 5 per cent collateral trust bonds and lend them to the Imperial treasury. This plan, however, was abandoned; but an issue of $40,000,000 currency, 4 per cent consolidated debenture stock was made and this stock was loaned to the Imperial treasury, and an option given to the government to buy this stock at any time within five years at $80 per $100 share. No other security issue was made by the Canadian Pacific; but the company spent $4,570,000 for additions and betterments on its own lines and $7,505,000 on leased and acquired lines.

In 1917 the balance sheet shows under "Investments and Available Resources" $10,586,734 cash and under "Working Assets" $31,424,894 "Cash in Hand." In the 1916 balance sheet under "Working Assets" there is $57,076,019 "Cash in Hand." Miscellaneous accounts payable totaled $8,821,809 at the end of 1917 as compared with $6,199,837 at the end of 1916.

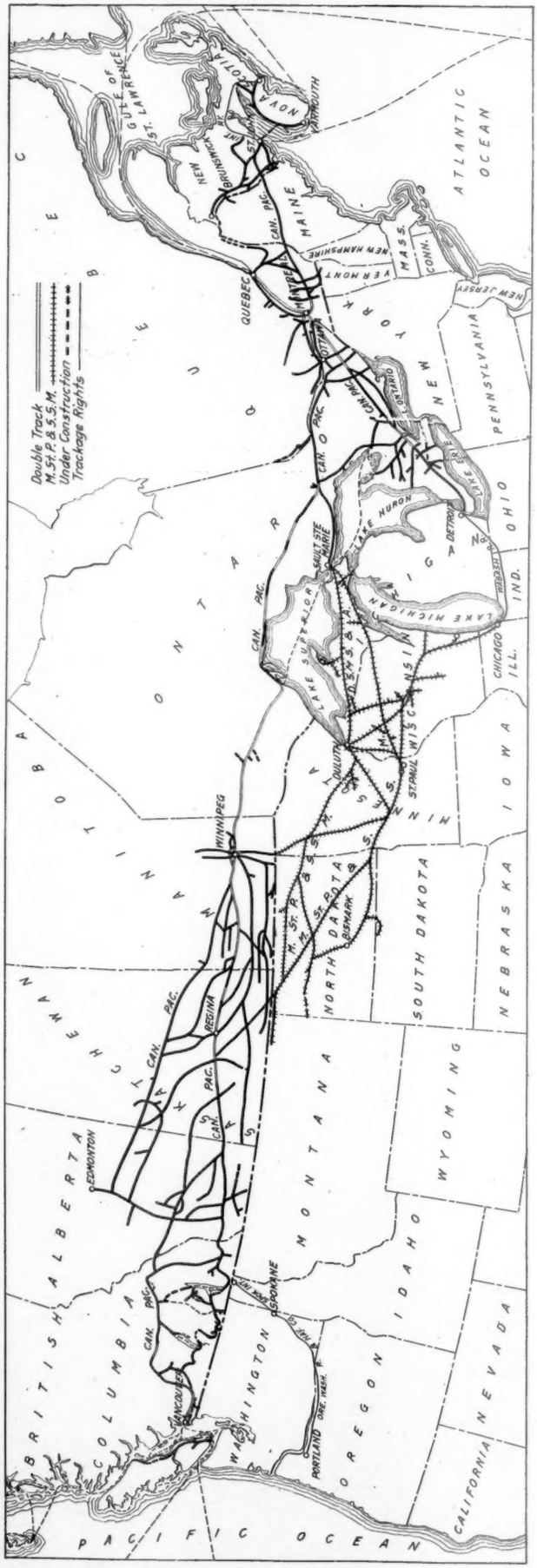
The following table shows the operating revenues and expenses for 1917 and 1916.

	1917.	1916.
Mileage operated	13,389	13,768
Freight revenue	$103,635,795	$96,454,896
Passenger revenue	30,238,986	26,849,282
*Total operating revenue	152,389,335	139,729,687
Maintenance of way and structures	17,470,069	17,249,500
Maintenance of equipment	23,404,263	18,908,464
Traffic expenses	3,084,944	2,940,872
Transportation expenses	53,029,260	42,385,348
General expenses	5,023,609	4,345,852
†Total operating expenses	105,843,317	89,253,188

* Includes revenue from mails, sleeping car, express, telegraph and miscellaneous.
† Includes parlor and sleeping car, lake and river steamers, and commercial telegraph expenses.

The following table shows the income account of the Canadian Pacific for the calendar year 1917.

Gross earnings	$152,389,335
Operating expenses	105,843,317
Net earnings	46,546,018
Interest and fixed charges	10,229,143
Appropriation for pension fund	500,000
Transferred to special income	1,968,683
Dividends paid from railroad earnings	21,427,276
Special income (interest and dividends received, earnings of steamship lines, etc.)	10,713,299
Dividends from special fund	7,800,000



The Canadian Pacific and Controlled Lines

Letters to the Editor

Breaking in Locomotives

CHICAGO, Ill.

TO THE EDITOR:

I notice on page 394 of the February 22 issue of the *Railway Age,* a suggestion from J. L. Coss, that locomotives be broken in after being turned out of the shop by having them handle bad-order cars or other work of a light nature, as the locomotive would reach the next terminal and be in condition to handle a full train on return trip.

I believe, if Mr. Coss had taken a second thought before making this suggestion, it might have occurred to him that the object in running a locomotive light as is customary on a trial trip, is to give the bearings a chance to find a permanent bearing and to prevent failures from hot boxes, or the journal heating up, as would be the case if Mr. Coss' suggestion were followed. Very often a failure or a hot-box caused from such handling would more than offset the saving made by utilizing the services of this locomotive for handling bad-order cars or light equipment.

To make the illustration a little plainer, it is customary with all manufacturers to break in and run the machines light before the load is placed on them. The breaking in trip also gives the shop organization a chance to correct any errors that may have been made, or to discover any imperfect work which has been done on the machine, thus making it a much safer machine to place in service than would be the case if handled the other way.

L. A. NORTH.
Shop superintendent, Illinois Central.

Why Standardize Equipment Now?

NEW YORK, N. Y.

TO THE EDITOR:

Whatever may be the reason for the standardization of equipment, whether, as an emergency measure, to provide equipment for the country quickly, or to inaugurate a comprehensive and permanent standardization scheme, it seems that effort is being made to complete, within at most a few months, standardization work which should require years to accomplish.

Standardization means stagnation. It will remove from the car and locomotive construction field a vast amount of talent and effort heretofore expended upon improvement therein. Standardization means retarded development to an extent proportional to the field covered. A small line or a small territory can and does entertain the adoption of improvement much more freely than larger lines covering more extended territory, because the introduction of a new standard always involves a change which is usually expensive in proportion to the amount of territory covered. The benefits to be derived from the new standard must be weighed against the cost of its adoption more and more carefully the more widely extended the territory affected. The consideration of a standard of construction or maintenance applying to a large system receives much more careful consideration than on the smaller roads for obvious reasons. When the territory of standardization is extended to the entire United States, the inertia and delay which must be reckoned with, in the introduction of equipment design improvements, will be multiplied many times.

The determination, for the entire country, of the "best" in car and locomotive equipment, to the last detail, is a colossal problem which cannot efficiently be solved within the time at the disposal of those with whom is lodged the responsibility for completion of the contemplated work. The task appears to be an impossible one, because the "best" for the United States cannot be obtained unless the "best" is also obtained for its various sections, territories or lines. There is not nor can there be a common "best" for all these sections, territories or lines, for many of the details to which, it appears, it is intended that standardization be applied.

In approaching this problem one first encounters consideration of the type of equipment to be adopted. It is needless to suggest anything on this subject, because the loss of efficiency to the country due to the use of standard types instead of other more efficient ones, especially adapted to the needs of the territory within which they are to be operated, must be apparent. The same applies to general dimensions and weights for the equipment types selected. Then comes the details of design and the specialties which are developed, manufactured and sold to the railroad companies and equipment builders by interests outside the ranks of railroad managers and employees, who must be accorded a large amount of the credit for the present state of the development of the art of railroad transportation. The standardization or the adoption of standards covering detail design and the selection of specialties will be an easy task for one vested with authority to make the necessary decisions, but the loss of efficiency which must become common throughout the country in connection, particularly with standardized lomomotive equipment, will be enormous.

The details of design and the specialties referred to are all important factors, because they represent parts with which the men, immediately busied in repair and operation of equipment, come personally in contact and to which, through years of experience, they have adjusted themselves, their methods and their tools. The new design details and the new specialties are the points where "the shoe will pinch" by adversely affecting the operating efficiency, because these will affect the operating efficiency of the masses of men who have immediately to do with maintenance and operation of the equipment involved. The adoption of general standards involves an attempt to reconcile differences, which to many may appear to be only psychological, between the expressions of representatives of various sections on the matter of what design details or what specialties are most efficient. The number of such differences which might be cited even on a single large railroad system would be most astonishing and such a list would be greatly expanded if applied to all the lines in the United States. Though some of these differences might be dismissed as "only psychological," they must still be reckoned with. Failure to recognize the importance of the "human element" must very seriously and adversely affect operating efficiency.

The maintenance facilities, small and hand tools at shops and enginehouses, together with the stock of repair materials on hand is, in every section, in keeping with the needs of specialties and design details obtaining in that section. The introduction of new details or new specialties will involve immediately the expense of providing new repairing instruments and materials, a loss in efficiency until such are provided and the men interested in operation and maintenance accumulate experience and familiarity with the new. The country can now ill-afford to suffer the loss of efficiency and expense of the transitional period.

To summarize the whole situation, it seems that standardization can only be part of an emergency program for quickly providing this country with the needed locomotive and car equipment, or a comprehensive permanent program which its sponsors believe will operate to the ultimate benefit of the country. If the purpose is the former, the standardization scheme as applied to the entire country appears to be unnecessary, detrimental and retarding; if the latter,

it is ill-advisedly considered now, because there are certainly greater things at stake than the final solution of this railroad equipment standardization problem, which should be postponed until after the present crisis is passed.

A CITIZEN WITH SOME RAILROAD EXPERIENCE.

An Unsafe Ruling

CLEVELAND, Ohio.

TO THE EDITOR:

Recently the conductor and engineman of a train were given an order stating, among other things, that a certain order was annulled. They did not hold a copy of that order and protested that they should be given a copy of it. The superintendent took the position that it was not necessary for the crew to hold the order, and further stated that if it were necessary for them to have a copy of the order the despatcher would have given it to them.

The point at issue here is vital to every operating officer because upon the correct understanding of the rules the safety of operation under the present train order system must depend. By denying the right of the trainmen to hold a copy of the original order the superintendent has placed himself in the position of having assumed that (a) the despatcher invariably supplies all orders which a train requires for safe movement under the rules and that (b) all orders placed by the despatcher at various points for a train are delivered to that train without failure; and that (c) such ruling violates no rule for movement by train order.

The ruling, to be safe, must be upheld by the rules and by experience in all three particulars. If a copy of the original order is denied the crew it must be shown that (a) the despatcher performs his duty perfectly, which manifestly is out of the question. But if the despatcher could be depended upon to issue all necessary orders there would be still the possible failure of the operator to deliver them. The government reports of accidents afford ample evidence on this point.

Nor do the rules permit such a ruling to stand unchallenged. Rule 201 in defining exactly what can enter into a train order, says "They must contain neither information nor instructions not essential to such movements"; and an order directing a train to annul an order which it does not hold would be "not essential" to the movement of that train. The superintendent's ruling created a hazard by the assumption that the crew could annul an order which it did not hold, or could take the alternative and disregard that portion of the order without danger.

The exact hazard in the ruling rests no less in the loose method of viewing the contents of a train order than in the actual danger which can result therefrom. Take an example. No. 108 is a train moving from A to Z, and is superior by direction. No. 121 is a train of the same class in the opposite direction. Order No. 4, directed No. 121 to meet No. 108 at B. This order was delivered to both trains. Order No. 15, directed No. 108 to meet No. 121 at C instead of B. This order was placed for No. 121 at D and delivered to No. 108 at A. No. 121 was delayed and the despatcher issued order No. 16 to No. 121 at E and to No. 108 at C, reading, "Order No. 15 is annulled." When No. 108 received order No. 16, it proceeded on its way without having any orders in effect concerning No. 121. No. 121 still held order No. 4 to meet No. 108 at B, as it had not received order No. 15. The conductor and engineman of No. 121 received order No. 16 at E, but as they did not hold order No. 15, they disregarded the annulling portion of the order, as instructed by the despatcher (after receiving their protest and conferring with the superintendent) and proceeded towards D, meeting No. 108 between E and D.

Should the operator fail to deliver a superseding order the same thing obtains. It follows that the occasional failure of the despatcher to issue or properly place orders and the failure of the operator, at times, to deliver all orders held, uphold the wisdom of the rule which forbids the inclusion in an order of instructions not essential; and upholds the crew in demanding a copy of an order which it has been instructed to annul.

G. E. COLLINGWOOD.

Local Freight Agent Responsible for Unjust Criticism of Railroads

WASHINGTON, D. C.

TO THE EDITOR:

In spite of denials from authoritative sources a large percentage of the public is still convinced that the railroads are bent on making a failure of the present experiment of direct governmental operation of the carriers. I think no one acquainted with the situation will fail to agree that the charge is untrue so far as it concerns the vast majority of officers of individual lines. Why, then, the persistency of this belief?

A careful analysis of the great volume of appeals for transportation help which reach the United States Department of Agriculture, after due allowance is made for the abnormal, leads to the conclusion that the opinion is fostered by the attitude of the local freight agent. He has more work than he ever had before, with less and poorer help to get it done. He is human enough to follow the line of least resistance, and the imperative duty rests upon higher officers to keep before him the whole picture of our transportation problems. When a patient, but exasperated, shipper tries to get some information as to the whereabouts and probable arrival of a shipment which has been out from six weeks to three months, and which under normal conditions should have reached destination in six days, and is met with the statement, "The government is running the railroads, and we are doing no tracing," what other conclusion can he reach than that somebody is "laying down on the job?"

Some two years ago the American Railway Association adopted a resolution looking toward putting an end to the tracing abuse, an abuse for which, under the competitive system, the railroads were more responsible than the shippers. The resolution was a move in the right direction and it has had the support of all right-thinking people. It is recognized that the same conditions which today make the tracing of some shipments so necessary, militate against their efficient tracing. When, however, such commodities as agricultural implements, spraying material, seeds and fertilizers, imperatively needed at once for spring planting in order that there may be no curtailment of the production of food in the United States this year, have been in transit far beyond the length of time necessary to get them to destination, they should be traced. If they can't be traced, the shipper is at least entitled to an intelligent explanation of why it can't be done.

I cite tracing merely as one example. There are others. Are we going to educate the local agent at this crisis and put him in a position to help to forestall baseless criticism?

CHARLES BRAND,
Chief of Bureau of Markets, United States Dept. of Agriculture.

THE JAPANESE GOVERNMENT RAILWAYS with a view to relieving the enormous freight congestion are pushing forward the construction of hundreds of freight cars at the workshops by offering a bonus of Y.300 ($150) a car for speedy completion.—*The Far Eastern Review.*

The Big Black River Bridge Nearly Completed

Improvements on the Yazoo & Mississippi Valley

Track Grades on 44 Miles of Line Near Vicksburg Have Been Raised to Protect Against Floods

BECAUSE FLOOD WATER in the Mississippi river reached a higher stage early in 1916 than had been recorded previously, submerging the main line of the Yazoo & Mississippi Valley in the vicinity of Vicksburg, Miss., with a resulting suspension of traffic for a period of three weeks, the railway undertook an extensive project for raising the grade of its tracks over a distance of 44 miles. Of this distance 27 miles was north of Vicksburg and 17 miles south of that city. While the raises made were relatively light, the work taken in the aggregate assumed rather large proportions, over 1,500,000 cu. yd. of grading being required. The details of this work, much of which was carried on under traffic, are of considerable interest and the following account, taken from an article by M. P. Black, assistant engineer, in the Illinois Central Magazine of January, 1918, presents the salient features:

South of Vicksburg the proximity of the existing track to the foot hills made it possible to obtain the desired raise in grade more economically by a change of alinement, pushing the new line farther away from the river, but north of the city the work was necessarily confined to a raise of grade on the existing alinement. After exhaustive surveys, it was decided to raise the top of rail from Vicksburg north to the Yazoo river, a distance of 10 miles, to an elevation three feet above the highest recorded water level. From the Yazoo river to Smedes, a distance of 17 miles, it was determined to raise the top of rail to the elevation of the hydraulic gradient of the 1916 flood. It was considered unnecessary to go higher on this part of the line because the United States Government is contemplating the construction of a levee, from Terrapin Neck cut-off to the mouth of the Yazoo canal, an improvement which, it is thought, will reduce the flood level in the area north of the Yazoo river.

The work from Vicksburg to the Yazoo river was authorized in the early part of 1916 and begun on July 10. The raise on this piece of track ranged from one to five feet, all of which was done under traffic. The earthwork amounted to 216,000 cu. yd., measured in excavation, and the raising of pile trestles to a total of 1151 lineal vertical feet. Besides this, 351 ft. of old trestle was eliminated. The total cost was $150,000 and, except for a few minor details, was finished in December, 1916.

From Vicksburg to Smedes

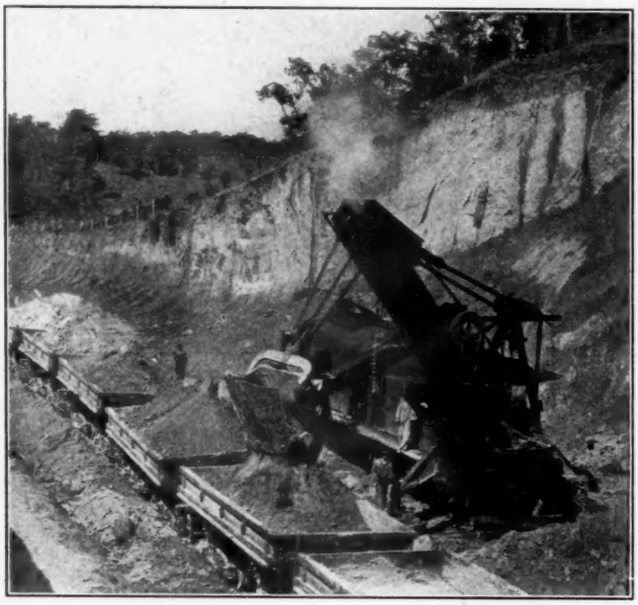
The work from the Yazoo river to Smedes was authorized in March 1917. The raise on this part of the line was from one to four feet and was done under traffic. It included 600,000 cu. yd. of earthwork, 4743 lineal vertical feet of trestle raised and 637 lin. ft. of additional pile trestle.

On account of inadequate drainage, side borrow for the embankment was not permissible. A borrow pit was secured at Kings, in a desirable location, making the average haul for the work 13 miles. Work on the track lay-out at the pit was started on July 13, 1916, and a steam shovel was put at work on August 1. The pit was opened with a 15C Atlantic type Bucyrus shovel, but later a 60C Bucyrus shovel was installed. Other equipment including 40 western automatic steel air dump cars of 20 cu. yd. capacity, thirty 30-cu. yd. Western cars of an older type, one Mann-McCann steel spreader and four 60-ton locomotives belonging to the railroad.

The spreader used was well adapted to this class of work as the main wings were designed to force the dirt back from the track for the passage of trains, but not so far as to increase the cost of placing the dirt in the track while it is being raised. The steel dump cars used were also satisfactory for this class of track raising work, especially where the embankment was not over eight feet high. The 30-cu. yd. cars of the same manufacture were too large for a low embankment, but would be satisfactory on a higher fill. For handling the dump cars, the locomotives were equipped with three-way valves, connected with the dumping apparatus so

that the engineman could dump the entire train in either direction on a signal from the dump foreman. The maintenance on the steel dump cars was light as one car repairer was sufficient to handle the running repairs on 70 cars.

The track was raised in one-foot lifts 1000 ft. long using gangs of 40 men working with ordinary No. 6 track jacks. The plan followed was to raise the track as high as possible on the available dirt, and then dump more. In this way the raising was always ahead of the dumping, giving the track



Typical Excavating and Hauling Equipment Used on the Work

good drainage, which was of great benefit during bad weather. The plans for the work called for an 18-ft. crown on the embankment with 1½ to 1 slopes. An allowance of 10 per cent was made for shrinkage and this seemed to work out very well for the material used.

To raise the ballast deck trestles, where the raise was two feet or less, additional caps were inserted, drifting them thoroughly. Where the raise was more than two feet it was made in like manner, but greater stability was secured by driving an additional pile at the ends of each bent and providing a top cap of sufficient length to bear on the two new piles. Additional sway bracing was also applied. The track raising was handled by the Vicksburg division forces and the dirt pit by the construction department. The work is now practically completed. The ballast used was of a cementing gravel type, hauled from Whittaker pit, 106 miles south of Vicksburg.

South of Vicksburg

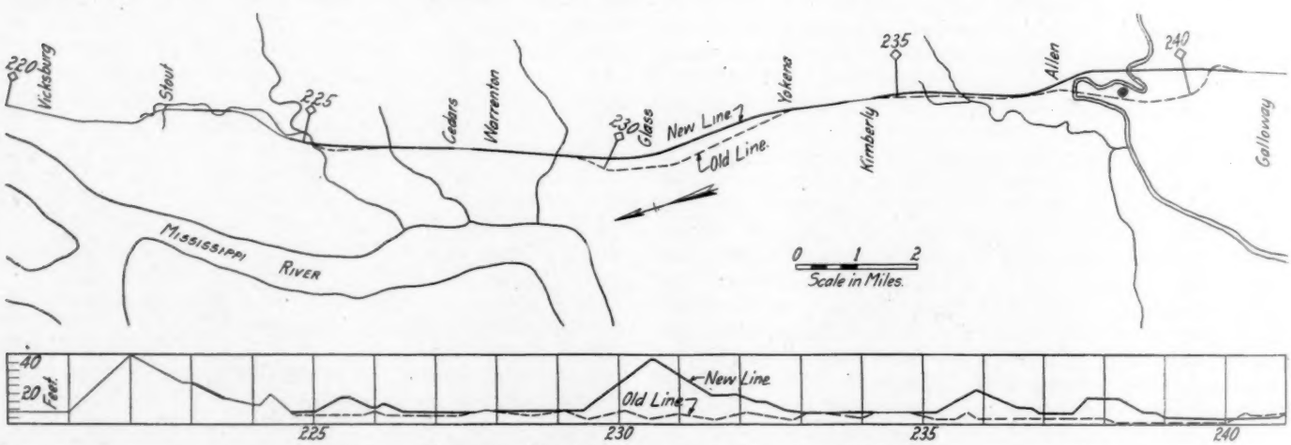
Of the 17 miles of reconstruction south of Vicksburg, all but five miles is on new alinement. The terrain being such that changes of line were advantageous in obtaining the desired raise in grade, further benefits in the new location were found in that it relieved the embankment of the wave wash to which it was subjected on the old location during high water and because an improved alinement could be secured. These improvements reduced the length of the line 0.32 miles and eliminated 233 deg. of curvature. The maximum grade used was 0.5 per cent and the maximum curve 2 deg. The work was authorized in July 1916, and it was started in August of the same year.

The work included 739,000 cu. yd. of earthwork, 2,197 lin. ft. of ballast deck trestle, 210 lin. ft. of open deck trestle, 80 ft. of concrete trestle and 1,173 lineal vertical feet of pile trestle raised, in addition to a new bridge over Big Black river consisting of six 75-ft. girder spans, one of which was equipped for hand operation as a Straus bascule span. The substructure is of concrete. The entire structure cost $170,000. By the construction of two subways, an overhead bridge and one mile of road change, all public grade crossings over the new alinement on the main road from Vicksburg to Yokena, a distance of 13 miles, have been eliminated.

The grading was done by the H. W. Nelson Company of Chicago, and the bridge work was done by company forces except the masonry work on the Big Black river bridge which was done by the Union Bridge & Construction Company of Kansas City. Mo.

The equipment of the grading contractor consisted of three 70C Bucyrus shovels, two pumping plants and tanks, one water distilling plant, one Jordan steel spreader, one wooden spreader, seventy-five 12-cu. yd. wooden dump cars, eight 16-cu. yd. wooden dump cars, and four to eight 60-ton locomotives, (leased from the railroad company). A night and day shift were operated on the grading work during a portion of the time.

Considerable difficulty was experienced in three places



Map and Profile of the Improvements South of Vicksburg

on account of the abrupt rise of the natural surface of the ground, as heavy as 10 per cent grades being used by dirt trains in reaching the shovels on the upper lifts. A very troublesome blue marl was encountered in several places in the excavation six feet above grade line, which would not sustain the load of the upper strata after the lateral pres-

sure had been removed. In one case the grade line was raised to the highest point of this material and in others the excavation was widened until an angle of repose was reached.

During the winter of 1916-17 a very high stage of the Mississippi river occurred, which overflowed the Big Black bottom and caused the failure of a frame bent trestle used

A Section of New Embankment

for dumping on the main line embankment there. This necessitated the construction of a temporary pile trestle, which was driven with a creeping driver during the high stage of water. Through Big Black bottom on a 32-ft. fill, approximately 4 ft. of subsidence and 10 per cent shrink-

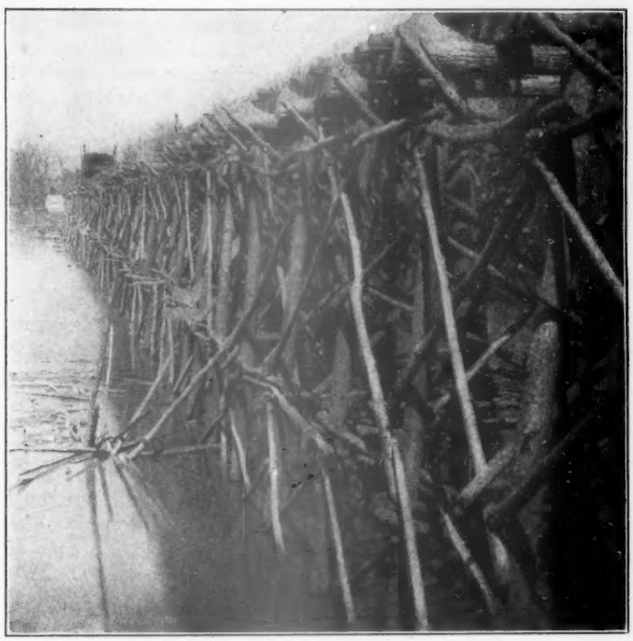
Building a New Line Higher Up on the Hill Side

age of the embankment material took place during this overflow.

Big Black River Bridge

The bridge over Big Black river and a 1,200 ft. ballast deck trestle south of it were constructed in advance of the grading. The material for these bridges was moved over a 7,000 ft. temporary track constructed through the bottom from the main track near Galloway. The first four bents of the 1,200-ft. trestle were driven with a track driver, after which a creeping driver was landed on top and used to complete the structure. Pile foundations with a penetration of 25 to 35 ft. were required at the river bridge. Wakefield sheet piling was placed around each pier as a precaution against high water, but weather conditions and the stage of water in the Big Black river were entirely favorable throughout the work, the channel piers being constructed with only five feet of water in the channel.

The work was well planned and carried through efficiently. The plant consisted of three hoisting engines, three stiff leg derricks, one barge, one power saw, a 1½-cu. yd. Ransome mixer, two steam hammers and a compressed air plant complete. A temporary trestle was driven across the river and all material was transported on this. The mixer was located on the south bank of the river, concrete being moved across the trestle in dump buckets loaded on a push car and operated by a continuous cable, attached to the drum of



A Filling Trestle for a New Embankment

one of the hoisting engines. The material was then placed in forms by a second derrick.

Washed river gravel was used in the piers, but on account of a large percentage of sand it was screened. A large steel screen was rigged over the hoppers and the aggregate unloaded onto the screen with a clam shell direct from the cars. The screen was set at an angle of 40 deg. with the horizontal and distributed the material to the respective bins.

The bridge superstructure was erected by one of the system steel gangs with an ordinary track derrick. Two temporary pile bents were driven in advance of each pier to afford sufficient reach for the derrick to land the 75-ft. girders.

This work is now complete, but as 3,000 ft. of the new embankment has not sustained an overflow period, the old main track from Allen to Galloway will be kept in condition for service until after the next overflow to insure the regular movement of trains in case there is an excessive subsidence and shrinkage of the fill during high water. With these improvements complete, the entire line through the overflow territory except the Vicksburg terminal is ade-

quately protected from probable high water, and plans for improving the latter are now under consideration. The work described was carried on under the direction of A. S. Baldwin, chief engineer of the Illinois Central, with M. P. Black, assistant engineer, in direct charge.

Changing Standard Time

DIRECTOR GENERAL McADOO has issued an order to the railroads containing instructions, based on a report by the Committee on Transportation of the American Railway Association, to be followed in connection with the change in standard time caused by the daylight saving bill, which becomes effective at 2 a. m. Sunday, March 31. Immediately after the change is made, as no change will be made in the time-tables, all trains then on the road would be one hour late according to the time table. On the other hand, trains which do not start until after the change in time naturally would not be late, except for other causes. This creates a problem of adjustment to be worked out in arranging meeting points. The instructions are as follows:

"At 2 a. m., Sunday, March 31, all clocks and watches in train despatchers' offices, and in all other offices open at that time, must be advanced one hour, to indicate 3 a. m.

"Employees in every open office must, as soon as the change has been made, compare time with the train despatcher. Clocks and watches in all offices at the first opening, at or after the time the change becomes effective, must be advanced to conform to the new standard time and employees, before assuming duties in such offices, must, after the change is made, compare time with the train despatcher.

"Each railroad will issue necessary instructions and arrange for such supervision and check of the watches of its employes as to insure that they have been properly changed to conform to the new standard time.

"Owing to the varying conditions which will prevail on the railroads of the United States, it is not advisable to issue a uniform rule or order to cover the details involved in the movement of trains at the period the change in standard time becomes effective. Therefore, each railroad must adopt such measures as may be necessary to properly safeguard the movement of its trains on the road at the time of the change."

Instructions for Train Despatchers

On a double-track line, with each of the two tracks occupied only by trains moving in one direction, a general order, directing that, after 2 a. m., all scheduled trains shall run one hour late will afford all necessary simplification of the despatcher's problems in ordinary cases. On a single track line, worked according to the Standard Code (with trains in one direction superior to all those of the same or a lower class moving in the opposite direction) the simplest plan for fixing meeting points safely is to annul all schedules and run the trains as extras. This is the plan adopted on a number of roads from whose officers information has been received. A typical general order, that of the Western Maryland, places on the despatchers the following requirements:

1. Annul all regular trains which, according to their schedules, would be on the road at the time of the change, and run them as extras.
2. Make no use of time orders for one hour before the change and until twelve hours after the change.
3. Require trainmen on the road to have a general comparison of time. That is, require the conductor, engineman, fireman, head brakeman and middle brakeman to get together and see that they all have the same time; the conductor then to compare time with the flagman.
4. Require trains to stop at the first telephone booth after the change and the conductor compare time with the train despatcher, who will make a record of it. Train orders are transmitted by telephone and there are telephone booths not farther than three miles apart, so that this comparison can be made almost immediately after the change becomes effective.
5. Have local time inspectors make the change in standard clocks.
6. Require all train and enginemen, both road and yard, to compare time before starting out after the general change.
7. The local time inspectors will furnish a man at large departure points for the first twelve hours after the change, to compare and record the time of all men before they go on duty.
8. Clocks other than standard will be changed by the clerks in local offices.

It was expected that the commercial telegraph companies would couple in their master clocks and send time on the Morse wires on the first hour after the change, for the benefit of all within hearing.

On the Erie Railroad the instructions for single track lines require all trains between terminals at 2 a. m. to be at an open telegraph office at that hour. Before proceeding from such station, the conductor and the engineman are to compare time with standard clock, or with the train despatcher; and to proceed only after receiving instructions from the despatcher. All train orders in effect at 2 a. m. are automatically annulled; trains holding orders must then proceed only on new orders.

Absolute Meeting Points

On the New York, New Haven & Hartford all scheduled trains on the road at 2 a. m. are ordered to run to destination not less than one hour late. On the single track lines of this company all scheduled trains have the right to the road to schedule meeting points unconditionally as regards opposing scheduled trains of the same class, and whichever of two such trains arrives first must wait for the other. The order to the despatchers provides, therefore, as regards opposing trains, simply that the despatchers shall arrange meeting points for trains not of the same class. Prior to the change they must issue no time orders to be in effect after 2 a. m.

After 2 a. m. despatchers must get from all conductors and enginemen then on the road acknowledgments that they have changed their watches, using for this purpose train-order form No. 31.

To provide against any possible misunderstanding the general manager of the New Haven ordered that at each train terminal and engine terminal a trainmaster, assistant trainmaster, road foreman of engines or other suitable officer should be on duty from 4 p. m. on Saturday, March 30, until 10 p. m. on Sunday, March 31.

JAPANESE TO EXTEND SHANTUNG RAILWAY.—An engineer of the Shantung Railway with an assistant started from Tsingtao recently to conduct preliminary surveys for the extension of the railway from Tsinan to Taokowchen.

SOUTH MANCHURIA RAILWAY TO BUY EQUIPMENT.—The management of the South Manchuria Railway is considering the appropriation of some Y.6,000,000 ($3,000,000) for buying at least 600 freight cars and 12 locomotives in the estimates for the next fiscal year. This is at the rate of Y.150,000 ($75,000) per locomotive and Y.7,000 ($3,500) per freight car. This estimate is of course subject to variation according to the price of iron and steamer freights and is based upon a plan to buy not materials for construction, but ready-made rolling stock. This is reported to be decidedly cheaper than the purchase of materials. All these purchases are to be made from the United States.—*The Far Eastern Review.*

Specifications for the United States Standard Cars

Seven Types of Bodies for Box, Hopper and Gondola Cars and Three Types of Trucks Are Provided

THE DIRECTOR GENERAL has issued specifications for the standard cars recently designed by the government's car committees and which have been approved by the director general. These specifications cover designs for bodies of a 40-ton steel underframe, double sheathed box car; a 40 and 50-ton steel frame, single sheathed box car; a 50-ton steel high side gondola car; a 50-ton composite high side gondola car; a 70-ton low side steel gondola car with drop ends, a 55-ton hopper car, and a 70-ton hopper car. There are only three designs of trucks for these cars. They are of 40, 50 and 70 tons capacity. Those parts of all designs which could, have been made common to all of the designs.

Car Body Specifications

The friction type of draft gear has been specified on all cars and the following five types may be used: Cardwell, Murray, Sessions type "K," Westinghouse and Miner. The M. C. B. Type D standard coupler with the 6-in. by 8-in. shank is specified on all cars. M. C. B. specifications have been followed to a large extent and a complete specification for paint is included to be used for all cars. The dimensions of these seven types of cars are shown in the accompanying table. Following is a list of the specifications that are common to the bodies of all of the cars:

GENERAL DIMENSIONS OF THE UNITED STATES STANDARD FREIGHT CARS

	40-Ton Double Sheathed Box	40 and 50-Ton Steel Frame Single Sheathed Box	50-Ton Steel Gondola	50-Ton Composite Gondola	70-Ton Steel Gondola	55-Ton Hopper	70-Ton Hopper
Length, inside	40 ft. 6 in.	40 ft. 6 in.	41 ft. 6 in.	41 ft. 6 in.	46 ft. 6 in.	30 ft. 6 in.	39 ft. 6 in.
Width, inside	8 ft. 6 in.	8 ft. 6 in.	9 ft. 4⅞ in.	9 ft. 1⅝ in.	9 ft. 6 in.	9 ft. 5½ in.	9 ft. 5½ in.
Height, inside	9 ft. 0 in.	9 ft. 0 in.	4 ft. 8 in.	4 ft. 8 in.	3 ft. 0 in.	.....	.....
Length over striking plates	42 ft. 1½ in.	42 ft. 1½ in.	42 ft. 10½ in.	42 ft. 10½ in.	48 ft. 7 in.	31 ft. 11 in.	40 ft. 5 in.
Width over eaves	9 ft. 4 in.	9 ft. 4¼ in.	.....	.....	.....	.....	.....
Width over all	10 ft. 2½ in.	10 ft. 2¼ in.	10 ft. 2⅞ in.	10 ft. 2⅞ in.	10 ft. 3¼ in.	10 ft. 2¾ in.	10 ft. 2¾ in.
Height from rail to top of car at eaves	12 ft. 10⅛ in.	12 ft. 10⅛ in.	.....	.....	.....	.....	.....
Height from rail to top of car body	.....	.....	8 ft. ¾ in.	8 ft. 3½ in.	6 ft. 4¾ in.	10 ft. 8 in.	10 ft. 8 in.
Height from rail to top of brake mast	14 ft. 1¾ in.	14 ft. 1¾ in.	8 ft. 7¾ in.	8 ft. 10¼ in.	7 ft. 1⅛ in.	11 ft. 2¼ in.	11 ft. 2¼ in.
Height from rail to top of running board	13 ft. 6⅞ in.	13 ft. 6⅞ in.	.....	.....	.....	.....	.....
Distance center to center of trucks	31 ft. 1½ in.	31 ft. 1½ in.	31 ft. 10½ in.	31 ft. 10½ in.	37 ft. 7 in.	21 ft. 11 in.	30 ft. 5 in.
Height from rail to center of coupler	2 ft. 10½ in.	2 ft. 10½ in.	2 ft. 10½ in.	2 ft. 10½ in.	2 ft. 10½ in.	2 ft. 10½ in.	2 ft. 10½ in.
Height from rail to bottom of center sill	2 ft. 4½ in.	2 ft. 4½ in.	2 ft. 4½ in.	2 ft. 4½ in.	2 ft. 4½ in.	2 ft. 4½ in.	2 ft. 4½ in.
Cubic capacity—level full	.....	.....	1,820 cu. ft.	1,770 cu. ft.	.....	1,880 cu. ft.	2,508 cu. ft.
Cubic capacity—with 30 deg. heap	.....	.....	2,310 cu. ft.	2,230 cu. ft.	.....	2,235 cu. ft.	2,978 cu. ft.

Center Sill Requirements.—The center sill construction is designed to meet the M. C. B. requirements, having an area of not less than 24 sq. in. in cross section and a ratio of stress to end load not exceeding .06.

Safety Appliances.—To be applied in accordance with United States safety appliances standard in effect on date of proposal.

Material Options.—Wherever more than one kind of material or construction is shown on drawing or mentioned in specification, it is understood that either may be furnished by the builder unless otherwise specified. Specialties to be as covered in contract.

Bolts and Nuts.—All bolts to have square head and nut unless otherwise specified. All bolts for securing steel against steel to have cotters, lock washers or lock nuts, in addition to common nut, and all bolts for securing wood against steel to be riveted over nuts.

Brakes.—Cars to be equipped with Westinghouse KD-10-12 type (the box cars are to be equipped with the KC-10-12 type) of air brakes of either Westinghouse or New York Air Brake Company's manufacture. Hose and gaskets to meet M. C. B. specifications. Brakes to be applied to all wheels and also arranged to be operated from one end of the car by hand. Braking power to be about 60 per cent of light weight of car based on 50-lb. cylinder pressure. Piston travel to be between 5 and 7 in. Hand brake power to be approximately the same as the air brake power. All piping to be black steel, merchantable, standard weight, and fittings to be malleable iron.

Draft Gear.—To be of the friction type, having a minimum capacity of 150,000 lb. and a maximum travel of 2¾ in., designed so as to fit into the space provided by the drawings. Clearance between coupler horn and striking plate to be 3 in. The following types may be used: Cardwell, Murray, Sessions type "K," Westinghouse, Miner.

Drawbar Yoke.—To be of the vertical plane type of an approved design, arranged to take the key shown on drawing.

Coupler.—To be cast steel, in accordance with M. C. B. contour and specification, having 6-in. by 8-in. shank, 21¼ in. long, as shown on coupler condition drawing, and slotted tail of proper depth to suit draft gear.

Coupler Operating Device.—To be of the top operating type without the use of clevises, links and pins; that is, to be direct connected to the locking block. Apparatus to be in accordance with condition drawings.

Center Plate.—To be, first, drop forged, or second, cast steel.

Side Bearing.—To be, first, frictionless, or second, plain. Frictionless side bearings to be of approved type to meet conditions shown on drawing. Drawings are arranged so that plain side bearing can be used in repairs.

Material Specifications.—The following M. C. B. specifications for materials are to apply:

Air brake hose.
Air brake hose gaskets.
Air brake hose label.
Boiled linseed oil.
Bolts and nuts.
Carbon steel bars for railway springs.
Chains.
Couplers.
Helical springs.
Japan drier.
Malleable iron castings.
Mild steel bars.
Steel castings.
Pipe unions.
Raw linseed oil.
Red lead.
Rivet steel and rivets.
Structural steel, steel plate and steel sheets for freight equipment cars.
Turpentine.
Welded pipe.
White lead for lettering.
Wrought iron bars.

Freight Car Paint Specifications No. 1008

Freight Car Color. I. This material will be bought in the paste form, and the paste must contain nothing but oil, pigment and moisture.

II. The proportions of oil, pigment and moisture must be as nearly as possible as follows:

Pigment	74 per cent by weight
Oil	25 per cent by weight
Moisture	1 per cent by weight

III. The oil must be pure raw linseed oil, as free as possible from foots, and well clarified by settling and age.

IV. The pigment desired if it contains sulphate of lime or gypsum should have this fully hydrated. It may have as inert material sulphate of lime of gypsum fully hydrated, silica, kaolin, soapstone or asbestine, or mixtures of any of these, sulphate of lime and silica preferred. The pigment should have the following composition:

Sesquioxide of iron	25 per cent by weight
Inert material	71½ per cent by weight
Carbonate of lime	3½ per cent by weight

V. Material must conform to shade furnished and in fineness of grinding meet test in accordance with approved method of Standard Railway laboratories.

VI. Shipments will not be accepted which:

1. Contain less than 23 per cent or more than 27 per cent of oil.
2. Contain more than 2 per cent volatile matter, including the moisture, the oil being dried to 250 degrees Fahrenheit, and the pigment dried in air which has been passed through oil of vitriol, at from 60 degrees to 90 degrees Fahrenheit.
3. Contain impure or boiled linseed oil.
4. Contain in the pigment sulphate of lime not fully hydrated, less than 20 per cent of sesquioxide of iron, less than 2 per cent or more than 5 per cent of carbonates, calculated as carbonate of lime, or have present any barytes, carbonates of alkalis, aniline colors, lakes or any other organic coloring matter, or any soaps or other emulsifying material.
5. Vary from shade.
6. Do not pass fineness of test.
7. Are a liver or so stiff when received that they will not readily mix for spreading.

Carbon Black. I. This material must be furnished in paste form.

II. The material desired under this specification is a paste, made on the following formula:

Pigment	65 per cent by weight
Oil	35 per cent by weight

The oil must be pure raw linseed oil, as free as possible from foots, and well clarified by settling and age.

The pigment desired should consist of:

Lampblack, or carbon black	15 per cent
Red lead	5 per cent
Asbestine	10 per cent
Silex or other approved material	70 per cent

The lampblack must be of good quality, and of such a character as to produce the standard shade. Ground coal, etc., will not be considered. Phosphates, barytes, sulphates of lime or gypsum, carbonate of lime or whiting or any other carbonates of sulphates, or any constituents other than those given in the composition of the pigment desired, must not be used.

III. Material must conform to shade furnished and in fineness of grinding meet test in accordance with approved method of Standard Railway laboratories.

IV. Shipments will not be accepted which:

1. Contain less than 32 or more than 38 per cent oil.
2. Contain more than 2 per cent of volatile matter. including the moisture, the oil being dried at 250 degrees Fahrenheit, and the pigment dried in air which has been passed through oil of vitriol at from 60 to 90 degrees Fahrenheit.
3. Contain impure linseed oil.
4. Contain in the pigment less than 13 per cent or more than 16 per cent carbon, preferably in the form of lampblack or carbon black, less than 4 per cent of lead representing the red lead, or have present any phosphates, barytes, sulphate of lime or gypsum, carbonate of lime or whiting, or any other sulphates or carbonates or any other caustic substances, such as caustic lime, or any soaps or other emulsifying materials, or any constituents other than those given in the formula for the pigment desired.
5. Do not pass fineness test.
6. Do not contain asbestine according to the formula of the pigment desired.
7. Are a liver, or so stiff when received that they will not readily mix for spreading.

Red Lead. This paint shall be furnished in prepared form ready for application. It shall contain not less than 64 per cent or more than 68 per cent of pigment. The pigment portion of the paint shall contain 60 per cent red lead. The red lead used shall contain not less than 85 per cent Pb_3O_4. The balance of the pigment portion of the paint shall consist of silicious matter such as magnesium or aluminum silicate or silica or a mixture thereof.

The vehicle shall consist of not less than 90 per cent linseed oil, the balance to be liquid drier and volatile thinner. The volatile thinner may be turpentine or mineral spirits or a mixture of the two. No rosin shall be present in the vehicle.

The prepared paint as received must have satisfactory working qualities and durability. It must be free from objectionable caking in the can. When applied to a smooth iron surface it must dry in twelve hours without running, streaking or sagging.

Box Cars

All designs of the box cars will have a steel underframe and steel ends. The bodies of the 40 and 50-ton single sheathed box cars are identical, the only difference is in the trucks. The specifications peculiar to the box cars and similar to all of the box car designs are as follows:

Flooring.—To be of fir or long leaf yellow pine, square edge and sound, 2¼ in. thick, tongued and grooved, 5¼-in. to 7¼-in. face width, secured to side and center sills, as shown on drawing.

End Lining.—To be yellow pine, No. 1 common, or fir 1½ in. thick, tongued and grooved, 5-in. face width.

Roof.—To be galvanized steel No. 22 gage, outside metal roof, laid over yellow pine roof boards, No. 1 common, or fir 13-16 in. thick by 3¼-in. or 5¼-in. face width as shown on drawing No. 1337. (The drawings state that the Murphy, Hutchins, or Chicago-Cleveland outside roofs may be used if they interchange with the designs shown.)

Steel Ends.—First, horizontal corrugated of three sheets; top sheet 3-16 in. thick, intermediate and bottom sheets ¼ in. thick with corrugations 2¼ in. deep. Second, vertical corrugated of two sheets, all ¼ in. thick with corrugations 2¼ in. deep. Third—Plain steel end with U-shape vertical stakes, as shown on drawings.

The following specifications apply only to the 40-ton steel underframe double sheathed box car:

Framing.—All dimension framing to be yellow pine, square edge and sound grade, or fir of sections shown on drawings.

Side Sheathing.—To be long leaf yellow pine, B and better, or No. 2 clear and better fir 13/16 in. thick, tongued and grooved, 3¼-in. or 5¼-in. face width, securing to framing as shown on drawings.

Side Lining.—To be yellow pine, No. 1 common, or fir 13/16 in. thick, tongued and grooved, 3¼-in. or 5¼-in. face width, secured to framing, as shown on drawings.

The side lining for the 40 and 50-ton steel frame, single

sheathed box cars is to be of, first, fir No. 2 clear and better, or second, yellow pine B and better. Lumber is to be thoroughly kiln dried, having maximum moisture of 5 per cent, tongued and grooved and with a 5-in. face.

The underframe for the double sheathed car is of different construction from that of the single sheathed car.

Gondola Cars

The gondola cars are designed to carry a concentrated load of two-thirds of the capacity of the car over a distance of 10 ft. at the center. Eight doors are provided on the 50-ton all-steel and composite high side cars. Those on the all-steel car are hinged cross-wise of the car, while those on the composite car are hinged along the center sill to dump toward the side. In both cases the doors are operated in pairs. The flooring for the composite cars is to be of long leaf yellow pine or fir, 2¾ in. thick, having a face of 5¼ in. to 7¼ in. The siding for these cars is of long leaf yellow pine or fir and 1¾ in. thick.

The underframe on all three of these designs is not the same in its entirety. There are, however, details which are similar. For instance, the draft sill construction and the body bolster center brace of both the 50-ton gondolas are the same as those used on the single sheathed box cars. The body bolster center brace and the rear of draft lug on the 70-ton gondolas are the same as those used on the 40-ton double sheathed box car. There are similarly other details which are common to the various designs.

Hopper Cars

The hopper cars are of all-steel construction, the 55-ton car having double hoppers and the 70-ton, triple hoppers. The four doors forming the center opening in the 70-ton car are operated by one mechanism and in all other cases the doors forming the openings are operated in pairs. These cars have the same end and draft sill and have the same design of rear draft lug. There are many details in the door opening mechanism which are common to both types of cars. The floor construction is the same and the hopper construction with the details is common to both. The side hopper sheets are the same.

Trucks

The trucks for all of the standard cars are covered by three specifications, one for 40-ton cars, one for 50-ton cars and one for 70-ton cars. The specification numbers for these trucks are 1274-B, 1276-B and 1241-B, respectively.

The following table gives the general dimensions of the three trucks:

	40-ton	50-ton	70-ton
Wheel base	5 ft. 6 in.	5 ft. 6 in.	5 ft. 8 in.
Distance center to center of journals	6 ft. 4 in.	6 ft. 5 in.	6 ft. 6 in.
Size of journals	5 in. by 9 in.	5½ in. by 10 in.	6 in. by 11 in.
Diameter of wheels	33 in.	33 in.	33 in.

The specifications for all three trucks are similar, the provisions in the majority of cases being identical. The trucks for the 40- and 70-ton cars are each required to be of ample strength to carry a load 10 per cent above the rated capacity in addition to the light weight of the car body. The 50-ton truck, while nominally for cars of that capacity, is required to carry a load of 121,000 lb. in addition to the light weight of the car body, thus making it available for use under 55-ton cars. Except in the case of those sections which are not identical for all three trucks, the text of the specifications is given in full. Sections where differences occur have been summarized to cover all thre trucks and the difference clearly pointed out.

Material Options.—Wherever more than one kind of material or construction is shown on drawing or mentioned in specification, it is understood that either may be furnished by the builder unless otherwise specified. Specialties to be as covered in contract.

Pattern Numbers.—All castings shall have a pattern number, as shown on drawing, with the initials "U. S. S." as a prefix.

Forgings.—Forgings may be made of either steel or wrought iron.

Truck Frames.—For the 40- and 50-ton trucks, the truck frames are to be: (1) Cast steel side frame of U-section members with M. C. B. standard removable journal box; (2) cast steel side frame of U-section members with journal box cast integral, or (3) arch bar type. Except for the exclusion of the arch bar type, the same types of side frame are specified for the 70-ton truck.

Tie bars for cast steel truck side frame to be of the short type, two per frame.

Cast steel side frame must meet limiting dimensions shown on limiting dimension drawing, and interchange in all respects with arch bar truck where this type of truck is permitted. They must be made in accordance with M. C. B. specifications and have a transverse section modulus in the top member of eight for the 40-ton truck, 10 for the 50-ton truck, and 12 for the 70-ton truck.

Truck Bolsters.—To be: (1) Cast steel bolster with integral center plate; (2) cast steel bolster with separate center plate, or (3) pressed steel or built-up bolster. Inside bearing surface of cast steel center plate to be dressed. Cast steel and built-up bolsters must interchange with pressed steel bolsters. Cast steel bolsters must have a section modulus vertically 10 per cent greater than pressed steel bolsters. Built-up bolsters must be as strong vertically as pressed steel bolsters. All bolsters to have a transverse strength at least 50 per cent of vertical strength.

Center Plates.—To be: (1) Drop forged, or (2) cast steel.

Side Bearings.—See body specifications.

Brake Beams.—Each 40-ton and 50-ton truck to be equipped with two M. C. B. No. 2 brake beams, and each 70-ton truck to be equipped with two M. C. B. No. 3 brake beams, all conforming to limiting outline and general conditions shown on drawing.

Brake Shoes.—To be: (1) With reinforced back, or (2) plain cast iron.

Wheels.—For the 40-ton trucks the wheels are to be M. C. B. standard for cars having axles with 5-in. by 9-in. journals. To be cast iron, weighing about 700 lb. each. Wheels to be in accordance with M. C. B. specification, and to be mounted on axles with a pressure of from 40 to 60 tons.

For 55-ton hopper cars, the wheels are to be: (1) wrought steel, (1) cast steel, or (3) cast iron. For all other 50-ton cars the wheels are to be cast iron. Wheels to be M. C. B. standard for cars having axles with 5½-in. by 10-in. journals. Cast iron wheels to have a nominal weight of 725 lb. each. Cast iron wheels to be mounted on axles with a pressure of from 45 to 65 tons, and steel wheels with a pressure of from 65 to 85 tons.

The wheels for the 70-ton truck are to be M. C. B. standard, wrought steel, for cars having axles with 6-in. by 11-in. journals. They are to be in accordance with M. C. B. specifications, and to be mounted on axles with a pressure of from 70 to 95 tons.

Axles.—To be of open hearth steel, smooth forged or rough turned between wheel seats and journals to be burnished. To be in accordance with M. C. B. specifications with sulphur and phosphorus content modified to limit of .06.

Journal Boxes.—To be of malleable iron, cast or pressed steel, complete with lids and M. C. B. type reinforced wooden dust guards suitable for axles with 5-in. by 9-in. journals, 5½-in. by 10-in. journals, or 6-in. by 11-in. journals, as the case may be. All boxes to be thoroughly cleaned and packed

with journal box packing which has been saturated with freight car lubricating oil.

Journal Bearings.—To be of brass, lead lined, M. C. B. specification grade "A."

Journal Bearing Wedges.—To be: (1) drop forged, or (2) cast steel. Wedges to be M. C. B. type, suitable for axles with 5-in. by 9-in., 5½-in. by 10-in., or 6-in. by 11-in. journals, as the case may be.

Painting.—Trucks to receive two coats of carbon black paint. Paints to be in accordance with United States Standard Specification, No. 1008.

Material Specifications.—The following M. C. B. specifications for materials are to apply:

Axles
Bolts and nuts
Boiled linseed oil
Brake beams
Brake shoes
Carbon steel bars for railway springs
Cast iron wheels
Cast steel bolsters
Cast steel truck side frames
Steel wheels
Helical springs
Japan drier
Journal bearings
Malleable iron castings
Mild steel bars
Steel castings
Pressed steel bolsters
Raw linseed oil
Red lead
Rivet steel and rivets
Structural steel, steel plates and steel sheets for freight equipment cars
Turpentine
White lead for lettering
Wrought iron bars

The following United States Standard Specifications are to apply:

Journal box packing (Specification No. 1009)
Journal box oil (Specification No. 1010)
Paint (Specification No. 1008)

Journal Box Packing

The following is the text of the United States Standard Specification No. 1009 for journal box packing:

The material desired under these specifications is curled vegetable fiber so curled as to impart to it the maximum resiliency; wool and cotton threads free from large lumps of any one component part and thoroughly machined and intimately mixed with the curled fiber in the following proportions:

(A)—Vegetable fiber—20 per cent
(B)—Wool waste —40 per cent
(C)—Cotton waste —40 per cent

Journal Box Oil

United States Standard Specification No. 1010 covers oil for journal boxes. The following is the text:

The oil required shall be well oil, and will not be accepted if it: (1) flashes from May 1 to October 1, below 298 deg. F., or from October 1 to May 1, below 249 deg. F.; (2) has a gravity at 60 deg. F. below 28 deg. or above 31 deg. Beaume; (3) from October 1 to May 1, has a cold test above 10 deg. F., and from May 1 to October 1, has a cold test above 32 deg. F.; (4) shows any precipitation when five cubic centimeters are mixed with 95 cubic centimeters of gasolene.

The precipitation test is to exclude tarry and suspended matter. It is made by putting 95 cubic centimeters of 88 deg. B. gasolene, which must not be above 80 deg. F. in temperature, into a 100 cubic centimeter graduate, then adding the prescribed amount of oil and shaking thoroughly. Allow to stand 10 minutes. With satisfactory oil no separate or precipitated material can be seen.

PERSHING TO USE CANALS.—The inland waterway system of France in the region occupied by American troops will be used for transporting some of General Pershing's supplies. A request from the American commander calls for the organization here of special engineer units for the operation and maintenance of the canals. The new units will probably be known as inland waterway companies. Men trained on American canals and rivers will be sought to fill up the ranks of the companies, and canal engineers will be selected as officers.

Rules for Capital Expenditures on Railroads

Director General McAdoo has issued General Order No. 12, prescribing the following rules to be observed with respect to all railroad work involving charges to capital account, viz.:

First: In determining what additions and betterments, including equipment, and what road extensions should be treated as necessary, and what work already entered upon should be suspended, please be guided by the following general principles:

(a) From the financial standpoint it is highly important to avoid the necessity for raising any new capital which is not absolutely necessary for the protection and development of the required transportation facilities to meet the present and prospective needs of the country's business under war conditions. From the standpoint of the available supply of labor and material, it is likewise highly important that this supply shall not be absorbed except for the necessary purposes mentioned in the preceding sentence.

(b) Please also bear in mind that it may frequently happen that projects which might be regarded as highly meritorious and necessary when viewed from the separate standpoint of a particular company, may not be equally meritorious or necessary under existing conditions, when the government has possession and control of the railroads generally, and therefore when the facilities heretofore subject to the exclusive control of the separate companies are now available for common use, whenever such common use will promote the movement of traffic.

Second: The construction of new railroad lines or branches or extensions of existing lines shall not be entered upon or contracted for without the Director General's approval.

Third: No new locomotives or cars shall be ordered or shall be constructed without the Director General's approval.

Fourth: Work contracted for or actually commenced prior to January 1, 1918, and unfinished, may be continued until further order, except insofar as in the judgment of the carrier concerned it may be possible to discontinue or curtail it without substantial loss, in order to conform to the general principles outlined in paragraph "First" hereof.

Fifth: Other work which does not involve charges to capital account in excess of $25,000 may be contracted for and commenced without approval of the Director General, provided that:

(a) it conforms to the policy outlined in paragraph "First" hereof; that

(b) it also falls clearly within the policy of the particular carrier as that policy has been applied in practice during the two calendar years 1916 and 1917; and that

(c) a report giving a brief description of each project involving not less than $5,000 nor more than $25,000 chargeable to capital account and showing also the amount chargeable to operating expenses, shall be made in duplicate to the Director of the Division of Capital Expenditures at Washington and Regional Director for the District within ten days after the work shall be contracted for or commenced.

Sixth: No work involving a charge to capital account in excess of $25,000 shall be contracted for or commenced subsequent to January 1, 1918, unless

(a) it conforms to the policy outlined in paragraph "First" hereof; and unless

(b) it be authorized by the Director General.

Seventh: The Director of the Division of Capital Expenditures is authorized to prescribe such forms, require such reports and issue such regulations and instructions as may be necessary to carry out this order.

Railway Wage Adjustment Board

A NEW PLAN for the adjustment of controversies between the railroads and the organizations of train service employees, growing out of the interpretation or application of the provisions of wage schedules or agreements, was formulated at a conference between the regional directors for the railroads and the executive officers of the four brotherhoods at Washington on March 22 and has been adopted and put into effect by Order No. 13 issued by Director General McAdoo. The plan provides for the creation of Railway Board of Adjustment No. 1 to deal with relations between the railroads and the brotherhoods. It is understood that announcement is to be made later of a similar board to deal with relations with other classes of employees, and that the entire plan was initiated by W. S. Carter, director of the division of labor of the railroad administration.

The plan is described in the following memorandum:

"Between A. H. Smith, C. H. Markham and R. H. Aishton, regional directors, representing the railroads in their respective regions, and W. S. Stone, grand chief engineer, brotherhood of Locomotive Engineers; A. B. Garretson, president, Order of Railway Conductors; W. G. Lee, President Brotherhood of Railroad Trainmen; and Timothy Shea, acting president, Brotherhood of Locomotive Firemen and Enginemen:

"It is understood that all controversies growing out of the interpretation or application of the provisions of the wage schedule or agreements which are not promptly adjusted by the officials and the employees on any one of the railroads operated by the government, shall be disposed of in the following manner:

"1.—There shall be at once created, a commission to be known as Railway Board of Adjustment No. 1, to consist of eight members; four to be selected by the said Regional Directors and compensated by the railroads, and one each by the chief executive officer of each of the four organizations of employees hereinbefore named, and compensated by such organizations.

"2.—This Board of Adjustment No. 1 shall meet in the city of Washington, within 10 days after the selection of its members, and elect a chairman and vice-chairman, who shall be members of the board. The chairman or vice chairman will preside at meetings of the board, and both will be required to vote upon the adoption of all decisions of the board.

"3.—The board shall meet regularly, at stated times each month, and continue in session until all matters before it are considered.

"4.—Unless otherwise mutually agreed, all meetings of the board shall be held in the City of Washington, provided that the board shall have authority to empower two or more of its members to conduct hearings and pass upon controversies, when properly submitted, at any place designated by the board; provided, further, that such subdivision of the board will not be authorized to make final decision. All decisions shall be made and approved by the entire board, as herein provided.

"5.—Should a vacancy occur in the board for any cause, such vacancies shall be immediately filled by the same appointive authority which made the original selection.

"6.—All authority vested in the Commission of Eight, to adjust disputes arising out of the application of the eight-hour law, is hereby transferred to the Railway Board of Adjustment No. 1, in the same manner as has heretofore been done by the Commission of Eight. All decisions of a general character heretofore made by the Commission of Eight are hereby confirmed, and shall apply to all railroads under governmental operation, unless exempted in said eight-hour law. Decisions which have been rendered by the Commission of Eight, and which apply to individual railroads, shall remain in effect until superseded by decisions of the Railroad Board of Adjustment No. 1 made in accordance with this understanding.

"7.—The Board of Adjustment No. 1 shall render decisions on all matters in dispute as provided in the preamble hereof, and when properly submitted to the board.

"8.—The broad question of wages and hours will be considered by the Railroad Wage Commission, but matters or controversies arising from interpretations of wage agreements, not including matters passed upon by the Railroad Wage Commission, shall be decided by the Railway Board of Adjustment No. 1 when properly presented to the board.

"9.—Wages and hours, when fixed by the Director General, shall be incorporated into existing agreements on the several railroads, and should differences arise between the management and the employees of any of the railroads, as to such incorporation, such questions of difference shall be decided by the Railway Board of Adjustment No. 1, when properly presented, subject, always, to review by the Director General.

"10.—Personal grievances or controversies arising under interpretation of wage agreements, and all other disputes arising between officials of a railroad and its employees, covered by this understanding, will be handled in their usual manner by general committees of the employees, up to and including the chief operating officer of the railroad (or someone officially designated by him) when, if an agreement is not reached, the chairman of the general committee of employees may refer the matter to the chief executive officer of the organization concerned, and if the contention of the employees' committee is approved by such executive officer, then the chief operating officer of the railroad and the chief executive officer of the organization concerned shall refer the matter, with all supporting papers, to the director of the Division of Labor of the United States Railroad Administration, who will, in turn, present the case to the Railway Board of Adjustment No. 1, which board shall promptly hear and decide the case, giving due notice to the chief operating officer of the railroad interested and to the chief executive officer of the organization concerned, of the time set for hearing.

"11.—No matter will be considered by the Railway Board of Adjustment No. 1 unless officially referred to it in the manner herein prescribed.

"12.—In hearings before the Railway Board of Adjustment No. 1, in matters properly submitted for its consideration, the railroad shall be represented by such person or persons as may be designated by the chief operating officer, and the employees shall be represented by such person or persons as may be designated by the chief executive officer of the organization concerned.

"13.—All clerical and office expenses will be paid by the United States Railroad Administration. The railroad directly concerned and the organization involved in a hearing, will respectively assume any expense incurred in presenting a case.

"14.—In each case, an effort should be made to present a joint concrete statement of facts as to any controversies, but the board is fully authorized to require information in addition to the concrete statement of facts, and may call upon the chief operating officer of the railroad or the chief executive officer of the organization concerned, for additional evidence, either oral or written.

"15.—All decisions of the Railway Board of Adjustment No. 1 shall be approved by a majority vote of all members of the board.

"16.—After a matter has been considered by the board, and in the event a majority vote cannot be obtained, then any four members of the board may elect to refer the matter

upon which no decision has been reached to the director general of railroads for a final decision.

"17.—The Railway Board of Adjustment No. 1 shall keep a complete and accurate record of all matters submitted for its consideration, and of all decisions made by the board.

"18.—A report of all cases decided, including the decision, will be filed with the director, Division of Labor of the United States Railroad Administration; with the chief operating officer of the railroad affected; the several regional directors, and with the chief executive officers of the organizations concerned.

"19.—This understanding shall become effective upon its approval by the director general of railroads, and shall remain in full force and effect during the period of the present war, and thereafter, unless a majority of the regional directors, on the one hand, as representing the railroads, or a majority of the chief executive officers of the organizations, on the other hand, as representing the employees, shall desire to terminate the same, which can, in these circumstances, be done on 30 days' formal notice, or shall be terminated by the director general himself, at his discretion, on 30 days' formal notice."

In the order approving the agreement Director General McAdoo says: "In existing circumstances, it is the patriotic duty of both officers and employees of the railroads under federal control, during the present war, promptly and equitably to adjust any controversies which may arise, thereby eliminating misunderstandings which tend to lessen the efficiency of the service."

Pershing Reports Railway Engineers in Battle of Picardy

THE AMERICAN RAILWAY ENGINEERS, true to the record they made last fall at the battle of Cambrai, are again apparently giving a good account of themselves in the present great drive.

General Pershing in his despatch to Washington Monday, said:

'Summary of activities, noon, March 24-25:

"Nothing to report but usual patrol and trench activities, with some gas shelling by the enemy north of Toul.

"Reference to the German communiqués of the 24th and 25th regarding American troops: Two regiments of railway engineers are with the British armies involved in this battle. Three companies of engineers were working in the areas mentioned in the communiqué in the vicinity of the Crozat canal.

"No report other than the German communiqué yet received regarding these troops."

Associated Press despatches also report that the American railway engineers are engaged.

An Associated Press despatch from the American headquarters also dated Monday said: "The fact that the enemy has officially mentioned the presence of Americans on the battlefield of the Somme and has repeatedly reported that some were captured indicates the good account that American engineers gave of themselves when the Germans attacked.

"They probably threw down their picks and shovels, took up guns, and fought as they did at Cambrai. Such Americans as were captured were engineers, who may have fought like infantry, as they have carried rifles as well as tools since Cambrai.

"Official details, telling the part that American engineers have taken in the battle, are eagerly awaited here."

From British Army Headquarters in France the despatch said: "American engineers have again been in the throes of fierce conflict, in which they have done excellent work in transportation."

The Pennsylvania Railroad Accident at Elizabethtown

FURTHER DETAILS of the derailment of westbound passenger train No. 19, on the Pennsylvania Railroad, near Elizabethtown, Pa., on the morning of March 15, when two passengers were killed, increase the wonder that the number of injuries to persons was not larger. This accident, due to the falling of a mass of rock weighing several hundred tons, occurred about 1 a. m., and most of the passengers who were injured are said to have been asleep. Of the total number of injuries, 24, a large majority are said to have been classed as not grave. The conductor of the train, E. E. Edwards, sustained fractures of both legs and also suffered internal injuries.

In one of the day coaches there was a party of soldiers, going to Camp Taylor, Louisville, Ky., who promptly got out their first aid kits and rendered valuable service in attending to injured passengers. The physicians gave the soldiers credit for manifesting remarkable knowledge of first aid treatment.

The scene of the wreck is shown in the large photographic illustration. The smaller picture of the same scene, viewed from a different point, was taken a little earlier.

The sleeping cars which were wrecked were the Limedale, the Collington, and the Irvineton. The car which is completely wrecked at one end, shown in the view where no wheels are visible, is the Collington; and the other two views show the right and the left sides, respectively, of the Limedale.

The train was moving at about 40 or 50 miles an hour. There are at this point only two main tracks. The fall of rock, from the north, struck the side of the Limedale, the third car in the train, overturned it, and pushed it across the south track into the ditch. The next car was partly overturned and the next one, the fifth in the train, ran up on one of the rocks, and, although remaining upright, was inclined about 40 deg. above horizontal.

The fall of rock consisted principally of four large pieces. The heaviest weighed between 150 and 200 tons, and the smaller ones from 15 to 20 tons each. Including smaller pieces, about 600 tons fell altogether, and 400 lb. of dynamite was used in breaking up the large pieces so that they could be removed.

The body of rock which fell did not roll from the top of the cut but became detached from a larger body of stone; the upper part being about 27 ft. above the top of the rail. It fell over toward the track with its base acting as a pivot. The parting of the rock is thought to have been due to the action of the extremely severe frost during the winter, followed by heavy rains a few days before the accident.

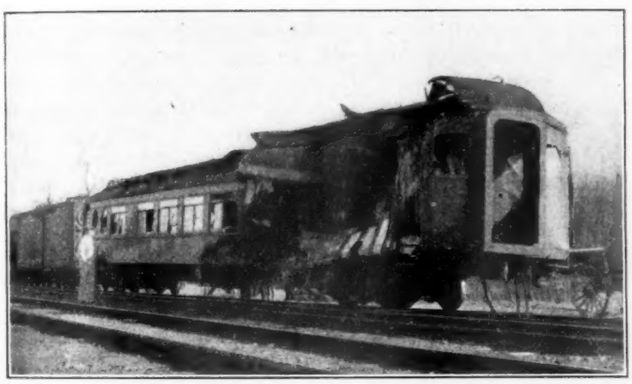
An officer of the road writes that this track is patroled by watchmen day and night, every hour; and the records of the watchman show proper performance on that night. An investigation was made by the coroner, who exonerated the company from blame.

In the first sleeping car, the Limedale, there were 25 persons, all in their berths. The mass struck the car a glancing blow and turned it almost completely upside down. The disaster came with such appalling swiftness and surprise that the passengers were unable to describe the first shock.

The Masonic Home, at Elizabethtown, prepared beds to care for the injured, and sent motorcars to the cut to take them away; but the machines were not able to get near enough, so it was decided to send all of the injured to hospitals in Harrisburg and Lancaster. They were sent in the uninjured cars at the front and the rear of the train, the rear cars east to Lancaster and the front cars west to Harrisburg.

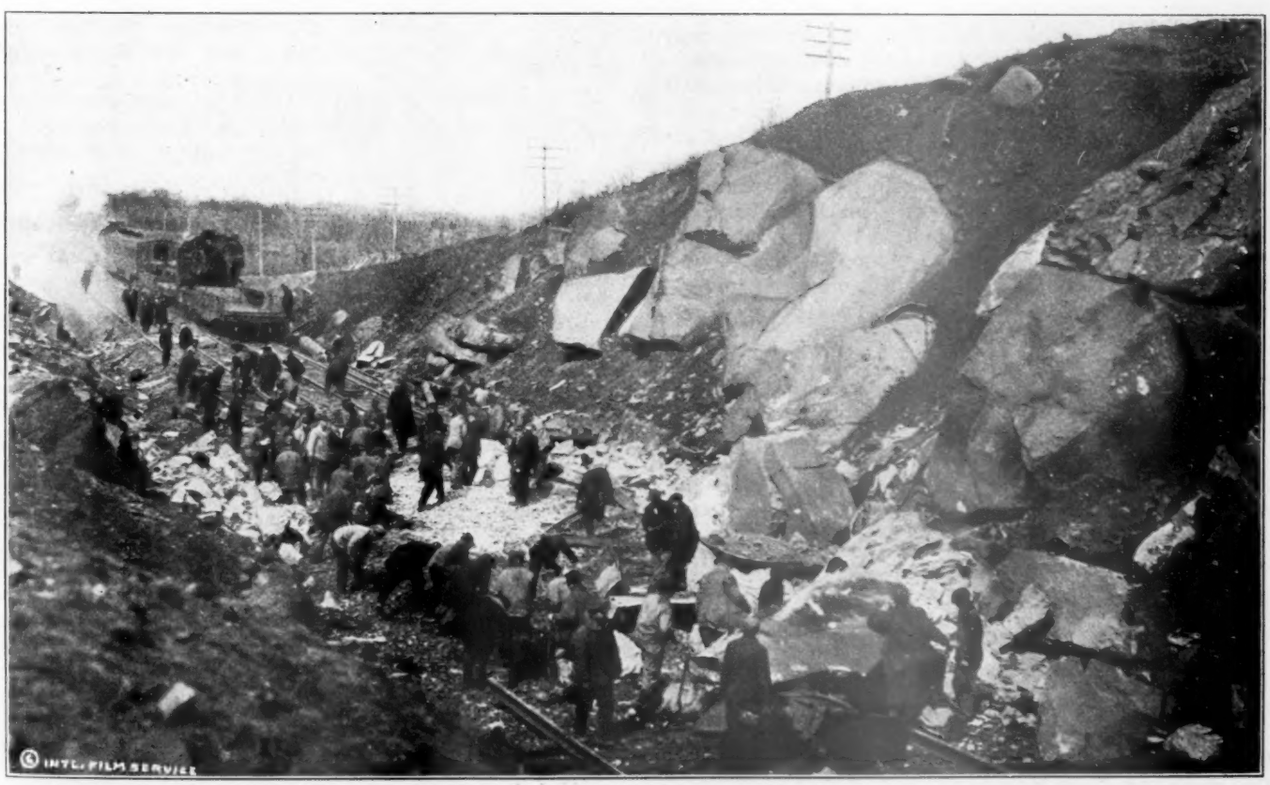
After the Removal of Two Cars

Sleeping Car "Collington"



Sleeping Car "Limedale"—Right Side

Sleeping Car "Limedale"—Left Side



Scene of Train Accident at Elizabethtown, Pa., March 15

Reported March 22, page 729.

Meeting of the National Industrial Traffic League

THE NATIONAL INDUSTRIAL TRAFFIC LEAGUE held its spring meeting at the Hotel La Salle, Chicago, on March 21 and 22, with a good attendance. H. C. Barlow, chairman of the executive committee, called attention to the proposed switching and spotting charges recommended at a recent joint meeting of Trunk Line, Central Freight Association and Western Trunk Line representatives, in Chicago. At this meeting it was recommended that in addition to the through rates applying between origin and destination points, the following charges be made for trap car service: (a) For trap cars containing minimum weight of 10,000 lb. the charge will be $3.50 per car; (b) for trap cars containing less than 10,000 lb. the charge will be $8.50 per car; (c) for trap cars containing 15,000 lb. or more, consigned to one consignee at one destination, no charge will be made, with the exception that for trap cars containing shipments of light and bulky articles no minimum weight will apply providing the car is loaded to full visible capacity. In order to avoid misuse of equipment carriers prefer not to furnish trap car service for cars containing less than 10,000 lb. and the charge of $8.50 per car (which equals the charge of $3.50 per car for trap car service plus a penalty charge of $5 per day) is recommended to provide a basis for cars containing less than 10,000 lb. which may be delivered to carriers.

A motion was made and passed to the effect that the chair appoint a committee to express the opposition of the League to these proposed spotting and switching charges. Accordingly, the president appointed H. G. Wilson, traffic commissioner of the Toledo (Ohio) Commerce Club, chairman of the committee.

The executive committee announced that it had received a letter from Edward Chambers, traffic director to the director-general of railroads suggesting that shippers may now be expected to show the correct weight on l.c.l. shipments and that on c. l. shipments the weight shown by the originating carrier should govern. On this point the executive committee called attention to the report of the weighing committee and added its endorsement. The recommendation of the weighing committee was as follows:

"The weighing committee believes the present code of weighing rules should be maintained; that the use of weighing agreements should be extended rather than abolished and that Mr. Chambers should be advised, that before any action is taken by the director-general, the weighing committee of the League and the committee on relations of the American Railway Association should be called into conference, at which time those interested might present their views as to the best method of securing correct weights."

The committee on freight claims submitted new forms for the reporting of concealed loss and damage claims, one of which must be executed by the shipper and the other by the consignee. No definite action was taken at the meeting concerning these forms, but each member was requested to send his approval or disapproval of them to the secretary after he has had an opportunity to examine them.

Constructive Placement Under Demurrage Rules

The committee on car demurrage and storage submitted for approval a proposed amendment to Demurrage Rule 5, Section A. At the annual meeting of the League in New York last November, attention was directed to changes in this rule proposed by the American Railway Association to make it conform with the decisions of the United States Supreme Court in the cases of the Menasha Paper Company vs. the Chicago & North Western and the United States vs. the Denver & Rio Grande, 41 I. C. C. 712. These proposed changes proved unsatisfactory to the League and subsequent conferences between representatives of the League and the American Railway Association brought out the suggestion that the following clause be added to the present form of section A: "Under this rule any railroad delay in making deliveries shall not be computed against the consignee." As amended in this manner Section A of Demurrage Rule 5 reads as follows:

"When delivery of a car consigned or ordered to an industrial interchange track or to other than a public delivery track cannot be made on account of the inability of a consignee to receive it or because of any other conditions attributable to the consignee, such car will be held at destination, or if it cannot reasonably be accommodated there, at the nearest available hold point, and written notice that the car is held and that this railroad is unable to deliver, will be sent or given to the consignee. This will be considered constructive placement. Under this rule any railroad delay in making delivery shall not be computed against the consignee."

The bill of lading committee reported that in accordance with the instructions of the League at the November meeting, the committee suggested to the Interstate Commerce Commission that two extra lines be provided in the new bill of lading, one to show the address of the consignee and the other to show the terminal delivery desired. A reply was received from the commission voicing the sentiment that no opposition to this amendment was anticipated on the part of either shippers or carriers and that it would receive due consideration by the commission in disposing of the bill of lading case.

The weighing committee reported that the adoption by the Trunk Lines of the National Code of Weighing Rules had apparently been shelved because of pressing war time duties. The committee called attention to the misinterpretation on the part of some roads of Section A, Rule 9, of the code of weighing rules and suggested the following interpretation to eliminate any chance for a misconstruction.

Rule 9, Section A, of the National Code of Weighing Rules provides: "When weights are obtained for the assessment of freight charges no charge will be made by the carrier for the service."

A car is weighed at point of origin by a switching line to ascertain weights for the assessment of freight charges.

Question: Can the switching line make a charge against the shipper for the weighing service?

Answer: No. Section A, Rule 9, applies regardless of whether the service is performed by a switching line or by a road haul carrier.

Question: Can the switching line make a charge for the service against the road haul carrier?

Answer: This is a matter of allowances and divisions between the railroads and does not come within the purview of the weighing rules.

Tracing Declared More Important than Ever Before

The special committee on tracing reported that there was even more need for tracing under present conditions than ever before. The committee considered the fundamentals of the question only, but recommended that detailed rules be worked out later and that the League should offer to appoint a committee to work with the office of the director general of railroads on this subject. The report read in part as follows:

"Unnecessary tracing is now condemned and discouraged as it has always been by this League. The necessity for tracing cannot now be determined by the length of time which has elapsed from date of shipment, nor by the distance traveled or to be traveled. No tracer shall be started where freight has not had a reasonable time to reach its destination, provided, however, that where the expedition of a particular

shipment is imperative because of its relation to the war, or where the preservation of life or property is involved, tracers shall be started by the railroad immediately upon request. Information as to forwarding, routing, passing records at junction or interchange points, arrival at destination and other information of record shall be promptly given upon specific request of consignor or consignee or their accredited representatives and is not to be construed as tracing.

The committee recommended (a) that whenever the shipper or consignee is willing to assume the telegraph expense the tracer shall be handled by wire and the information furnished promptly; (b) that when the carrier cannot secure and furnish promptly the desired information by mail, the tracing or expediting shall be done by wire at carrier's expense as at present. It was the view of the committee that a large part of the burden of tracing would be removed and the expediting of traffic materially aided if the records of passing at junctions, interchange and terminal points were maintained by the carriers and it recommends that the director general instruct the carriers to establish or reinstate such records.

The Poindexter Bill

The report of the executive committee endorsing the present fourth section of the Interstate Commerce Act and instructing the president of the League to appoint a committee to go to Washington and appear before the committees of Congress against the Poindexter bill was adopted. H. C. Barlow, chairman of the executive committee was appointed chairman of the special committee for this purpose.

Luther M. Walter Speaks at Banquet

Luther M. Walter, formerly attorney of the National Industrial Traffic League and now assistant to C. A. Prouty, director of public service and accounting of the United States Railroad Administration, addressed the League at dinner on the evening of March 21. He stated that the administration would make no changes merely for the sake of change, but would operate the railroads as economically as possible, with the prime purpose of winning the war. Rate relations, he said, would not be upset until shippers interested had opportunity to be heard. He said the same was true concerning the matter of uniform classification. He stated that railroad traffic men had become unduly alarmed by the turn of events and that although the duties of soliciting and advertising men might be seriously modified no one would be thrown out of employment. It was his understanding that the present routine methods of making and changing rates would be followed absolutely, except on such occasions as the President might wish to establish what might be called large percentage increases.

AUSTRIAN RAILWAYMEN STRIKE.—Austrian workers on the Northwestern Railway, the Ferdinand-Northern and several other lines have struck, according to the Lokal Anzeiger of Berlin. The military ordered the strikers to return to work, but they refused.

ITALY'S COAL FAMINE ACUTE.—Press despatches from Rome report that during interrogations in the Chamber of Deputies on February 21 regarding the question of coal, lack of which is crippling Italy's transportation facilities, it was shown that no importations of American coal were expected in view of the arrangement made with the English Government, that only one-third the necessary coal was arriving in Italy, and that locomotives were being ruined by burning clinker coal and lignite. Unless America acts to relieve the situation it will eventually be impossible to distribute food supplies throughout Italy or work mines properly. War industries face a shortage of coal. The present situation requires action and not discussion.

800 Miles of Railway at Front in 1918

"WE ARE BUILDING over here to fight a thirty-year war, if necessary, in order to establish the principles of democracy." This is the answer of America's director general of transportation, W. W. Atterbury, vice-president of the Pennsylvania Railroad, at the time when Germany is hammering on the Western gates, as given in an interview cabled by Wilkes Forrest to the New York Tribune Tuesday.

America's vast project to feed and equip her army in France rests on the shoulders of this American civilian. Next to the man whose responsibility is ships and then more ships, his is the responsibility of railroads in France and then more railroads in France.

Sitting in his map-walled office in a Paris boulevard today, this American civilian, garbed in the uniform of an American brigadier-general, talked to the Tribune correspondent while shells were falling in the capital. The dull booms hardly interrupted the conversation.

Like Working at Home

"We are building railroads, docks and transportation yards in France today as we would build them at home," he said. "Our task is to make two lines of railroads from the sea bases to the front, wherever this front may be. We must Americanize the spurs, sidings, branch lines and yards, and it is most important that we do not interfere with the belts of French railroads which cross our path. We are digging under or going over these roads whenever we encounter them.

"The French lines have their own problems. The diversion of traffic due to the war has placed a heavy burden on the French ports, shipping and railway facilities. It is America's policy not to interfere. The French Government deserves the highest praise for its administration of the railroads under war conditions and the constantly depreciating equipment.

"France is giving us every possible assistance, but her great network of strategic railroads, planned and built for the protection of her frontiers, necessarily fals far short of the heavy requirements of the constantly growing American army. America, therefore, must build, and is building, all the excess lines necessary to handle our problem.

"Before the end of 1918 we will have not less than 800 miles of railroad constructed. All of our labor, rails and equipment must be shipped from home. We are now getting some of our ties from American forestry regiments working in French forests.

"You have seen many locomotives already here labelled 'U. S. A.' We will use about 1,500 locomotives, and of these 200 have arrived, and have been assembled, and 400 more have been generously contributed by the Belgian government. We will use about 20,000 American box cars, now under orders and being constructed. These will be shipped to France and rebuilt.

Yards Cover Miles

"Several of our great transportation yards cover many square miles and thousands of acres of storage space are being rapidly provided in order to act as a reserve for the enormous army which we will have at the front."

Railroad building thousands of miles from America is an enormous task. It surpasses even the difficulties of the Hills, the Harrimans and the O'Shaughnessys of North America. They faced the North American wilderness. America's military railway builder faces the wilderness of sea water, weather and submarines. He faces other things which cannot be told just now. But American military railroads are almost as vitally important to the American soldiers as ships are. They are gradually linking the sea to the firing line.

As the army grows, so must the railroads on which the army depends for the never-ending stream of everything that

keeps a fighting army fighting. These railroads, with their energetic American civilian builders, depend entirely on ships.

"Everything vital to America's success in this war reverts to ships. As the army will depend on the railroads, both the army and railroads depend on ships."

He added:

"Did any one ever stop to think that in order to supply one pair of shoes to a soldier at the front, there must be not less than twenty-four pairs in various stages; from manufacturer to storage on the American side, from storage to docks, from docks to ships, then the 3,000-mile ocean transportation with sea and submarine menace, from ships to docks here, from docks to storage, and then the gradual movement through the supply depots, and finally to the soldier?

Difficulties Faced

"When you realize that this situation applies to everything that the soldier eats and wears, and to all military supplies, it must be recognized why these railroads and storehouses are necessary.

"Our difficulties are great in order to avoid tearing down parts of French towns for the enlargement of our railroad yards. We sometimes are forced to go outside of town and rebuild a complete new yard. Sometimes it is necessary to mar the landscape and the ancient landmarks which have made France famous.

"In one case we were forced to destroy an ancient chateau and fill the beautiful grounds with tracks and storehouses. The owners remonstrated, but it was 'c'est la guerre.' "

"Is America's vast project in France of a flimsy, temporary character?" I asked the general.

"No," he answered, as a German shell broke not far away. "We are building over here to fight a thirty-year war if necessary, to establish the principles of democracy."

But, like the man at the front, his success depends on ships.

Universal Interline Freight Waybill Adopted

To Be Used With or Without Through Rates. Last Road to Be the Final Arbiter of Rates and Divisions

THE UNIVERSAL INTERLINE WAYBILL, prescribed by Director General W. G. McAdoo and noticed in the *Railway Age* last week, page 728, is shown on the opposite page. The director general's order, No. 11, dated March 16, is addressed to the "chief executive officer" of each road and is as follows:

1. Effective May 1, 1918, all freight forwarded from one point in the United States to another point in the United States (including freight passing through Canada or Mexico enroute), and moving over two or more railroads or boat lines under federal control, must be waybilled through from point of origin to destination, regardless of the absence of joint rates. When destination station is on a railroad not under federal control, freight should be waybilled to the junction point with such road; provided, however, that nothing in this paragraph shall prohibit through waybilling arrangements between carriers now under federal control and others not so controlled.

2. A separate waybill must be made for each less carload consignment and for each carload; provided, however, that a single waybill may be made to cover a special train moving at a lump sum charge for the train, or for shipments which, on account of their length, require more than one car.

3. Waybills for carload freight must move with the cars. Waybills for less carload freight must be moved with the cars when practicable; otherwise so as to reach the transfer point or destination station with or in advance of the cars. In the event that waybills for solid cars of less carload freight are mailed direct to destination or transfer stations, a separate waybill [to go with the car] must be made on standard form, showing destination of car, and bearing notation:

"Merchandise car, waybills mailed to ————————"

Junction agents must show stamps on this waybill in the same manner as provided in Paragraph 4.

4. Complete routing must be specified on each waybill as and when made, in the space provided therefor. Each forwarding junction agent must stamp each waybill in the space at the bottom of the waybill. . . . Stamp must be 1½ in. by ⅜ in.

5. When freight moves on a joint through rate, each waybill must show freight charges from point of origin to destination.

6. Freight moving on a combination of rates: (a) If the billing agent is in possession of all necessary tariffs, the rate and freight charges to and beyond the rate breaking points must be shown successively, one beneath the other, and the total of all freight charges indicated. For example, a shipment from New York to Denver will show:

	Weight	Rate	Freight
To Miss. River	200	$1.055	$2.11
Miss. River to Denver	..	1.62	3.24
Total	..	....	$5.35

(b) If the billing agent is not in possession of the rates beyond the rate breaking point, the waybill must be headed to destination, and the rate and freight charges shown to the via which the shipment moved, in the following manner: rate breaking point, with the movement beyond indicated. For example:

	Weight	Rate	Freight
To Miss. River	200	$1.055	$2.11
Miss. River to Denver			

In this case the billing agent will stamp or endorse waybill as follows: "Shipment not rated through. Junction or destination agent will insert charges omitted." (c) The junction receiving agent must revise rates on inbound billing to the rate breaking point, insert the divisions of revenue accruing to the roads up to the rate breaking point, and certify to their correctness, by use of an appropriate rubber stamp. (d) Agents forwarding shipments from rate breaking points must insert rates and freight charges applicable to destination or to the next rate breaking point. If in any case this plan is not practicable arrangements may be made to have such rates and charges inserted by destination agents.

7. When miscellaneous charges, of any character, accrue in transit, and they are to be collected from consignee, they should be shown as separate items in the freight charges column on waybills, with notation opposite each item indicating the nature of the charge, the point at which it accrued, and the road to which due. In final settlement, such charges will be allowed as an arbitrary to carrier to which they are due.

8. A standard form of waybill [8½ in. x 11 in.] is hereby prescribed, and must be used on and after May 1, 1918. (a) This waybill blank must be printed on paper equal in weight to "80 pound No. 1 Manila, 24 x 36 in."

(b) Only the original and one copy of waybill shall be made. The original must accompany the shipment as herein provided and the copy must be retained by the company making the waybill. (c) This waybill shall also be used for astray freight. (d) This waybill is designed to be folded vertically; the left side contains all information for the physical movement of the car. (e) For special classes of traffic, requiring a larger waybill, the form may be 8½ in. by 22 in. (f) Supplies of waybill forms now on hand may be used for local business.

9. The Plan of Audit Office Settlement recommended by the Association of American Railway Accounting Officers, as outlined in that Association's 1917 Synopsis—Paragraphs 16, 17, 18, 28, 29 and 30 shall govern. This plan requires that destination carriers shall make settlement with each of the carriers in interest for its proportion of revenue.

10. The total freight charges, as reported by destination carrier, and the divisions thereof, must be accepted by all interested carriers as final. No recheck of such settlement will be made, except as to advances and prepaid, and to establish lists of unreported waybills.

11. The following forms must be used in preparing Audit Office Settlement accounts: (a) Interline abstract. Form A. A. R. A. O. 104. (b) Division sheet. Form A. A. R. A. O. 105 (c) Summary of interline accounts. Form A. A. R. A. O. 110. These forms are recommended by the Association of American Railway Accounting Officers, and samples are shown in that Association's 1917 Synopsis.

12. Unless and until otherwise ordered revenues shall be apportioned among carriers in accordance with the route via which the shipment moved, in the following manner: (a) Where joint through rates are in effect, established divisions, or any simplifications thereof which may have been perfected, shall be used. (b) Combination rates shall be divided as made. If one or more of the factors in the combination are joint through rates, such factors shall be divided as provided in sub-paragraph *a* preceding. (c) When neither of the above division bases can be used, revenues shall be divided on twenty mile block mileage basis, each carrier to be allowed at least twenty miles, and originating and terminal carriers an additional twenty miles each as constructive mileage.

13. Simplified bases for opportioning inter-road freight revenues are now being considered; upon their determination carriers will be advised thereof in a subsequent order.

14. Immediate steps shall be taken to make the foregoing regulations effective as of May 1, 1918, and to procure supplies of the prescribed waybill and accounting forms, and to issue the necessary instructions to all concerned.

NORTH & SOUTH RAILROAD CO.
FREIGHT WAY-BILL

Stop This Car For Gross Weight of Car and Contents for Engine Rating.
At Tons

CAR MOVEMENT RECORD
CAR INITIALS | CAR NUMBER

ROUTE (Show Each Junction and Carrier in Route Order)

TO (STATION) (STATE)

CONSIGNEE AND ADDRESS

INSTRUCTIONS REGARDING ICING, VENTILATION, MILLING, WEIGHING, ETC. IF ICED, SPECIFY TO WHOM ICING SHOULD BE CHARGED.

YARD STAMPS MUST NOT BE SHOWN ON FACE OF THIS WAY-BILL

TRANSFERRED
To Car No.
At

Waybill
Date No.

FROM (STATION) (STATE)

SHIPPER

Length of Car Ft. In. | Marked Capacity of Car | Stenciled Weight of Car

★ Reference Numbers

WEIGHED
At
Gross
Tare
Allowance
Net

Indicate by SYMBOL in column, provided how weights were obtained.
B—Railroad Scale
A—Weighing Bureau or Agreement
T—Tariff, Classification or Minimum
S—Shipper's Agreement or Tested Weight
E—Estimated (Weigh and Correct)

LADING	WEIGHT	How Obtained	RATE AND TARIFF No.	FREIGHT	ADVANCES	PREPAID

★ Insert here license numbers, bill of lading numbers, or such other reference numbers as are essential.

JUNCTION FORWARDING AGENTS WILL SHOW JUNCTION STAMPS IN THE SPACE AND IN THE ORDER PROVIDED BELOW.

1st Jct.	2d Jct.	3d Jct.	4th Jct.	5th Jct.

Form No. Size 8½ x 11

United States Standard Interline Way-Bill

Reduced about one-third in width and height.

BRITISH CAR REPAIR COMPANIES AMALGAMATE.—The annual report of the British Wagon Company said that for some time past the directors have experienced inconvenience in the freight car repairing branch of the business. A large number of the employees are now engaged on military service, thereby causing a serious shortage of labor of all kinds, and there is great difficulty in obtaining the necessary materials. Owing to these facts considerable delay has occurred in the repair of freight cars, and serious congestion has taken place in traffic. The Railway Executive Committee appealed to the car repairing companies to take steps to deal with the difficult position. Recognizing the necessity for immediate action, some of the directors have conferred with directors of the other principal car repairing companies, and it has been decided to form a new company, which will take over the freight car repairing business.

The Coal Problem*

By E. G. Bailey

THE LARGEST AND MOST IMPORTANT QUESTION before the American people today is the coal problem. Some may disagree and claim that it is transportation but sift the present situation to the bottom and you will find that the coal problem, or rather the abnormally high percentage of ash and impurities in the coal, is like sand in the bearings of transportation, of ocean shipping and of practically all industries, slowing them down at the most critical time in our history.

The less ash and impurities in coal, the less number of tons you need. The greater the demand for coal, the higher the price and, under present conditions, the poorer its quality. Price has been regulated; but quality has run riot.

Why have we allowed this to happen just at the time when we need heat units in their most concentrated form? Why are the railroads burdened today with hauling millions of tons of utterly worthless dirt? To say that this excess of ash in the coal is worthless, does not describe the situation. The price paid for this dirt is only a small fraction of the damage. The rest of its cost is in the decreased efficiency, the lowered capacity, the increased labor and the excessive repair bills involved in the combustion of this coal, and in the necessity of closing down industries because of the lack of the coal which might have been shipped in place of these so-called "worthless," but costly impurities.

Coal Shortage or Dirt?

Results show a 10 per cent decrease in quality of coal delivered to many plants during the past year. Considering that the navy and other government requirements receive a greatly increased tonnage of the best coal, a very conservative estimate of 5 per cent is made as representing the increased demand for coal due solely to the poorer quality of that received. With a total production of about 600,000,000 tons of coal in 1917 this means that 30,000,000 tons of utterly worthless slate and dirt were loaded into cars and delivered to the consumer, where it caused additional trouble in burning the coal with which it was mixed.

Cost of Dirty Coal

On the basis of the average price of coal delivered to the consumer being $4 per ton, this excessive amount of impurities has cost the country $120,000,000 during the past year. Adding to this the various estimates made of the cost of our heatless holidays, ranging from $1,000,000,000 on up, it is obvious that this question of impurities in coal is of such tremendous importance that an effective remedy must be found immediately. Manufacturers would be glad to pay a dollar per ton more for coal of standard quality.

Competition normally compels the mine operator to clean his coal, but when the coal shortage began in 1916 manufacturers were so anxious to get coal that they offered and gladly paid prices of $5 to $6 per ton at the mines and took anything that was black. For this reason quality went from bad to worse. A similar condition existed in the bituminous coal industry during the anthracite strike of 1902 and 1903. Prices went sky high and quality dropped off decidedly. The same economic factors which caused this condition then prevail today. Under the present system of paying the operator prices fixed by the government, no distinction whatever is made between the best and poorest grades of coal. So why should one operator go to additional expense of shipping clean coal when he receives no more pay than his competitor who loads dirt?

To simply appeal to the miners and operators, even on the grounds of patriotism, is not sufficient. To increase the government price on the present basis of control to $5 per ton at the mines would not reduce the percentage of impurities in the coal one iota.

The remedy suggested is to establish standards of quality and pay a premium for clean coal. The price paid to the operator should be based on standards established by the Fuel Administration according to different mining districts, etc., with premiums based almost entirely upon percentage of ash, and especially the free ash, as slate and rock which can and should be eliminated at the mines.

Coal sampling stations should be established by the government at certain central points where large quantities of coal are received direct from mines such as New York, Philadelphia, Baltimore, Hampton Roads and the lake loading ports. Each station should be equipped with machinery for obtaining representative samples from as many individual cars as necessary to determine the average quality of coal shipped from each mine during each month.

Load Cars with the Cleanest Coal

The operator would not know what cars were to be sampled, for the Fuel Administration could consign or reconsign any cars in transit to the coal piers or power houses where the sampling stations were located. The mine operator would therefore have a real incentive to load every car with as clean coal as possible.

The car distribution at the mines, which is an important point to the operator, should also be based upon the quality of coal produced so that there would be an added incentive to load clean coal, and the market would always be supplied with a greater proportion of the better quality of coal, than if the empty cars were pro-rated equally among the poorer and better mines as at present.

Actual knowledge of the quality of coal would also be of great benefit to the Fuel Administration in classifying various mines into pools so that the consumer, and particularly the railroads, would receive coal of uniform quality, thereby enabling them to obtain maximum capacity and efficiency in the combustion of this coal.

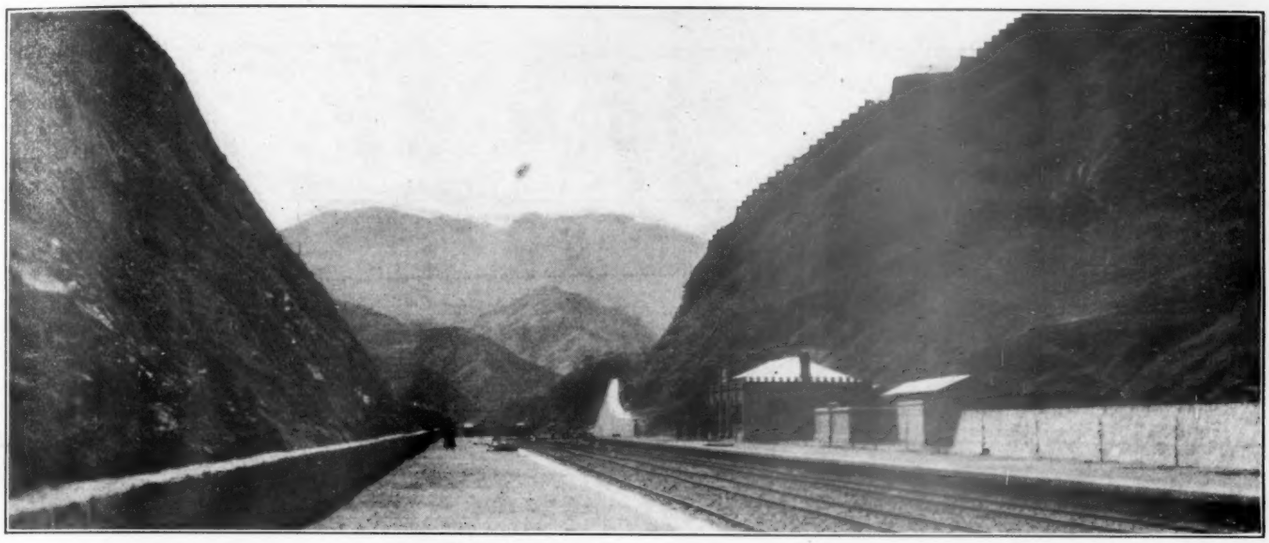
There is sufficient labor at the mines to clean the coal, and the railroads can haul enough good coal, but they can not get the necessary heat units to the consumer if they must be burdened with hauling 30,000,000 tons of unnecessary dirt. We have our choice of either building thousands of locomotives and a hundred thousand cars and adding to the terminal facilities of our railroads within the next few months or removing the excessive impurities from the coal. The latter can be done quickly and effectively. It is the only feasible remedy for our present "Coal Problem."

Clean Coal or Heatless Holidays Next Winter?

Are we going to have coal enough to see us through the coming winter? The present indications are that, unless some radical steps are taken immediately, the coal shortage will be much worse than it has been. To be satisfied with preferential shipments and permit many of our basic industries to close down, is to play the quitter's game, when, by concentrating our efforts on loading clean coal at the mines, and improving the efficiency of its combustion in furnaces we can have ample coal for all, thereby helping instead of hindering the Thrift Campaign.

We have heard the argument that we should be patriotic and be content with inferior coal, old culm banks and other refuse fuel the same as we are with wheat substitutes in our bread. But the food and fuel problems are very different. Economy in their use applies equally to both, but the neck of the bottle of the food question is production, while the weakest link of the coal problem is transportation. It is a crime to burden our railroads with hauling dirt when it is within our power to ship clean coal and supply heat units in their most concentrated form.

*Abstract of lecture delivered at the Johns Hopkins University, Baltimore, Md., as one of the J. E. Aldred lectures on engineering practice.

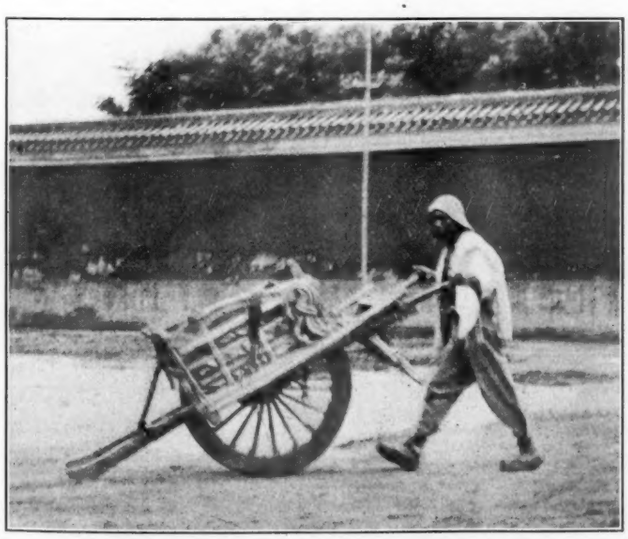


On the Pekin-Kalgan Railway Near the Great Wall. This and following photographs copyrighted by Press Illustrating Service.

China's Greatest Need Today Is Transportation

This Enormous and Rich Country Has Only 6,000 Miles of Railway and Practically No Good Roads

CHINA NEEDS MANY THINGS TODAY, but one of the things that it needs most is means of communication. Today there are in China with its enormous area of 1,335,000 square miles and 386,000,000 population, only about 6,000 miles of railroad—3 miles to each 100 square miles and 0.19 miles to each 10,000 people. In a recent series of three articles in Engineering of London, a writer examining this situation clearly brings out these facts and emphasizes the necessity of constructing new lines of standard gage railway and of feeder lines of good roads for use by steam or motor tractors or motor trucks. He also discusses the proposal to build light 2 ft. narrow gage lines as feeders in place of roads, but dismisses the idea as extremely unwise. There would be small savings in the first cost of light railway construction, he says, but operating costs per ton mile would be greater than either on roads or standard gage railways, their capacity would not be sufficient and there would also be comparatively costly transshipment required. But further than that he draws attention to the fact that practically all the railways at present in China are of standard gage and emphasized that narrow gage lines would not be proper for a country so enormously rich and of such great potential traffic as China.



Type of Wheelbarrow in Common Use

An abstract of the three articles follows:

The war in Europe has undoubtedly set back the development of China for many years unless the government can gain the confidence of the people and foster some spirit of patriotism. China at the outbreak of the war was committed to the construction of some 6,300 miles of railway, practically all of which was to be built by foreign loans. Had this scheme been carried out, the very slow development of the country would have made great strides. As it is, the country is nearly bankrupt, the government insecure and without the confidence of the country. The people as a consequence are very chary of investing in government controlled concerns. It is fairly obvious that China must still look for money abroad, and there is very little doubt that it will be more costly than heretofore. Consequently, the study of economy will be more of a necessity than it has been in the past.

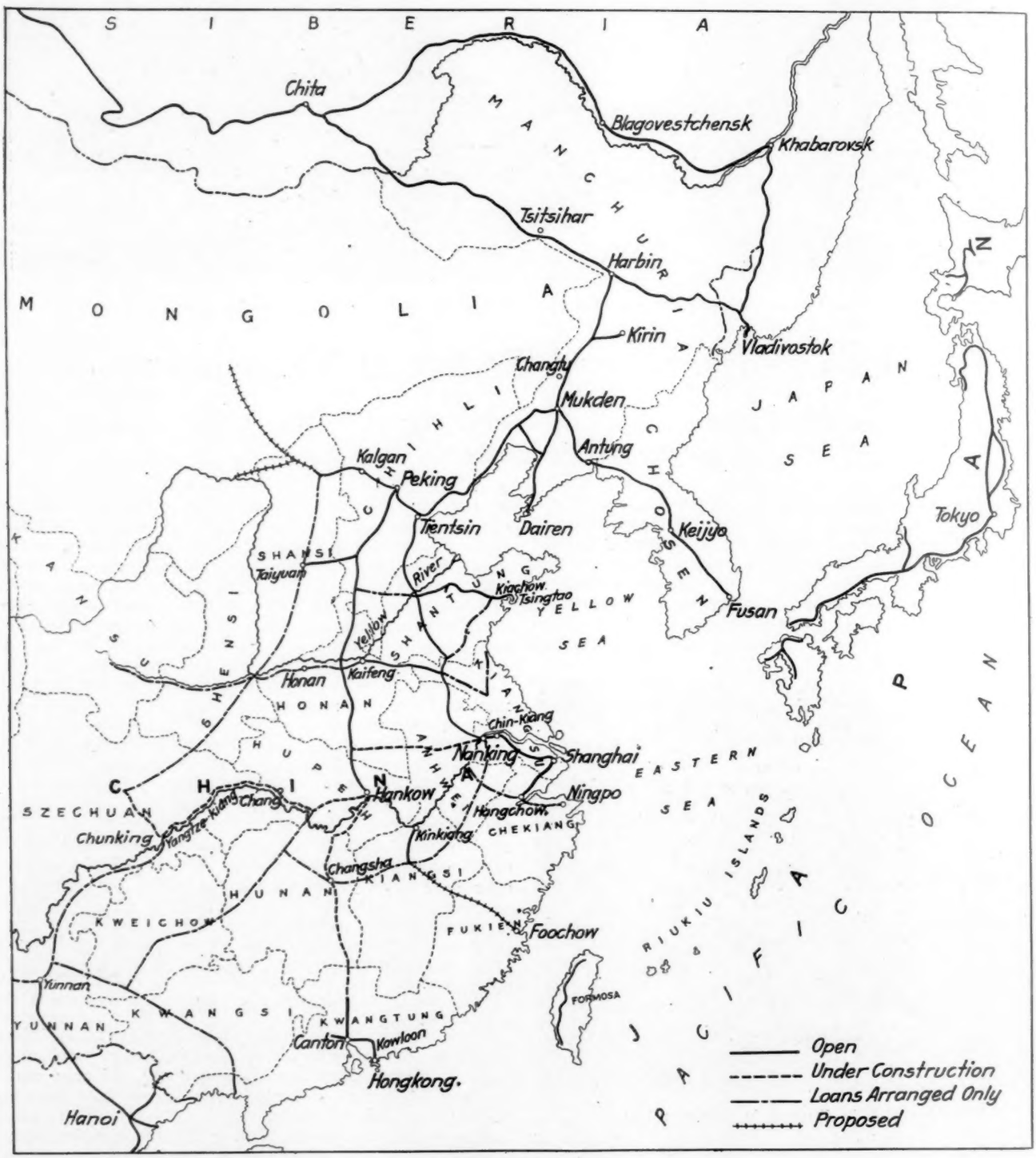
The Great Plain

It will be seen from the above table that the bulk of the population is concentrated in the following provinces: Anhwei, Honan, Hupeh, Chili, Shantung, Kiangsu and Northern Chekiang. These provinces form what is known as the Great Plain of China.

Roughly, the area of this plain is 210,000 sq. miles, with a population of 132,000,000, or 625 persons to the square mile, the densest in the world. In fact, the nine eastern provinces in or near the Great Plain have an area of 502,-192 square miles (two-fifths of the whole 18 provinces) and an average population of 458 persons to the square mile.

The necessity of railways for the development of this area

is extremely obvious when its mineral wealth, cheap labor and present lack of transport facilities are considered. Practically the whole of the western portion of this plain is one vast coalfield, with smaller coalfields in central Shantung and northern Chili. Other minerals, ironstone in particular, are also present in large quantity on the eastern boundary. The mineral and other resources, agricultural and transport, are as follows:



The Railways of China

Chili, the metropolitan province, has an area of 58,949 sq. miles. It produces wheat, maize, oats and salt, and is also responsible for a large proportion of the coal production of China. It is served by the Peking-Hankow, Peking-Mukden, and Peking-Kalgan railways, the Peking-Mukden Railway providing its outlet to the sea via Tientsin and the Peiho. This river, the only one of importance, is navigable for steamers drawing 15 ft. of water as far as Tientsin, 40 miles from its mouth. This port is kept ice-free in mild winters at considerable expense, but is always liable to be closed from December to March on account of ice. The Peiho is tortuous, has a bar at its mouth, and is continually

silting up. Most of the coal produced is shipped through the ice-free port of Chingwangtao, the property of the Chinese Engineering & Mining Company, whose accommodation for shipping has been designed with a view to its own requirements only.

The estimated populations of the 18 provinces of China proper, together with their areas, are given in the accompanying tables.

Shantung

Shantung has an area of 65,104 sq. miles. It is extremely fertile. Cotton, the clothing of the people, silk, straw-braid, glass, earthenware and bean oil, are some of its products. It has considerable mineral wealth, producing a fair quantity of coal, some gold and copper.

A Scene Outside the Peking Wall

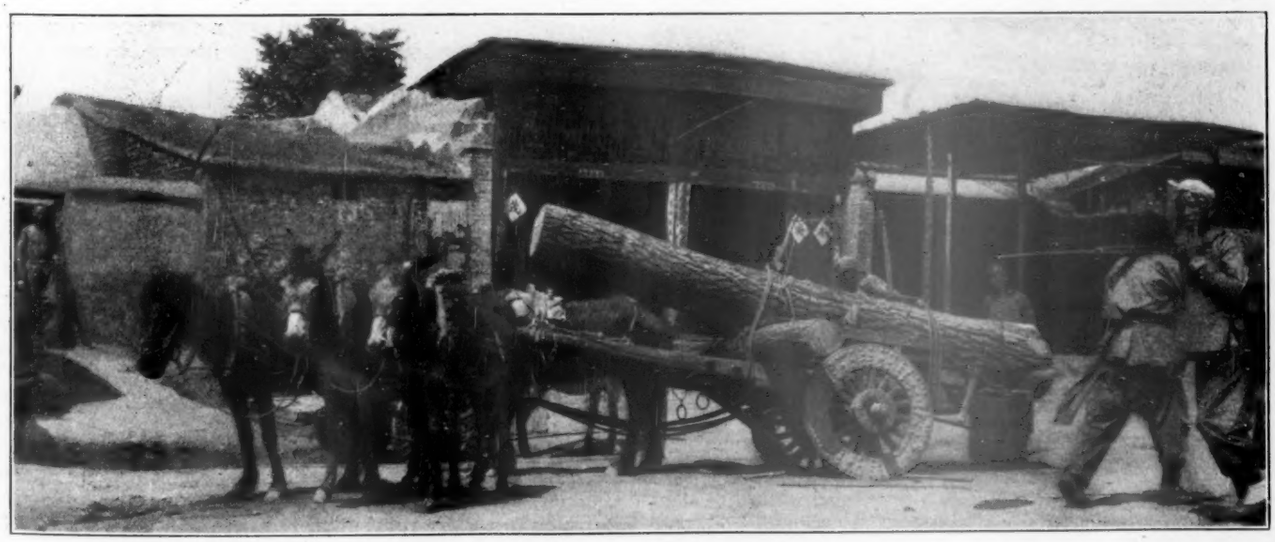
This province prior to the war was the German sphere of influence and has been exploited with the usual thoroughness. It is served by the trunk line from Tientsin to Pukow, and has rail connection with the excellent once-German port of Tsingtau. All the railways were either German owned or under German control. Internal water communication is very poor. The province is traversed by the Grand canal, which runs from Tientsin to Hangchow, but this in some places has been allowed to silt up and is generally in poor condition, and of little use as a waterway. The Yellow river, the only one of importance, is only navigable in parts, for small steamers as far as Tsinanfu, the provincial capital, 200 miles from the mouth of the river. This river owing to its tendency to silt up and burst its banks is of more expense than utility, costing the government about 750,000l. ($3,750,000) per annum for conservancy. A railway along its banks for efficient handling administration of the conservancy works would appear to be one of China's most urgent needs. All railways and mines in the province are now worked by the Japanese.

THE POPULATION AND AREA OF THE PROVINCES OF CHINA PROPER

Province	Area, square miles	Population	Number to square mile
Anhwei	48,461	20,596,000	425
Chekiang	39,150	11,589,000	296
Fukien	38,500	22,199,000	574
Honan	66,913	22,115,000	340
Hunan	74,320	21,002,000	282
Hupeh	70,450	34,244,000	486
Kansu	45,450	9,285,000	74
Kiangsi	72,176	24,534,000	340
Kwangsi	78,250	5,858,000	65
Kiangsu	44,500	20,905,000	470
Kwangtung	79,456	29,706,000	377
Kweichow	64,554	7,669,000	118
Chili	58,940	17,937,000	304
Szechuan	116,800	67,782,000	406
Shansi	56,258	12,211,000	221
Shantung	53,762	36,247,000	557
Shensi	67,400	8,432,000	126
Yunnan	10,706	1,721,000	108
	1,335,841	386,000,000	292

Honan

Honan has an area of 66,913 sq. miles and is extremely fertile. Its principal agricultural product is beans, and a large amount of coal is produced. It is served by the Peking-Hankow Railway, which provides its outlet to the sea via Hankow and the Yangtse river. It has also another outlet to the same river via the Huai river and the Tientsin-Pukow Railway, but this route, which would serve much of Central Honan and Northern Anhwei, is at present undeveloped, only junks of 80 tons maximum carrying capacity at present using this river.



A Heavy Load for Poor Pavements

Anhwei has an area of 48,461 sq. miles, and is said to

be the poorest province in China. It has never got over the devastating effect of the Taiping rebellion of 1866, and is in more of an arrested state of development than the other provinces of the plain. It produces tea, hides, rice and silk, and has deposits of coal and copper which have not been developed. The province is served by one line of railway, the Southern Section of the Tientsin-Pukow Railway, which is a British-built line. Water communication is poor, the only navigable rivers being the Yangtse and the Huai, the latter providing the only outlet to the sea for the northern part of the province via the above railway. This last river,

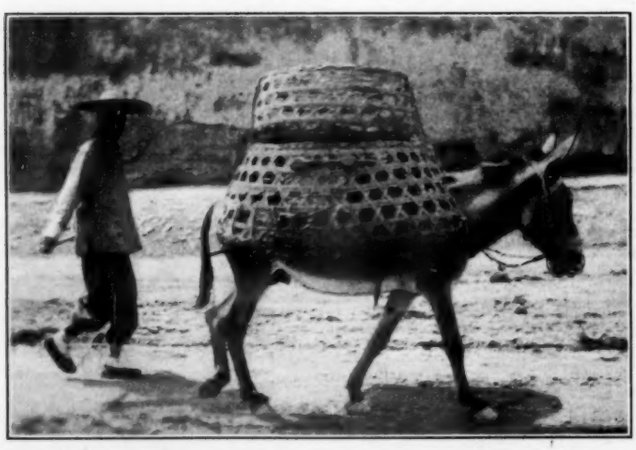
THE RAILROADS OF CHINA

Road	Gage	Mileage	Locomotives	Freight cars
Chinese Government Rys.:				
Pekin-Mukden, Tungchow, Tinghow & Moukden	4 ft. 8½ in.	766	132	3,104
Canton-Hankow (Hupei-Hunan Section)	4 ft. 8½ in.	31	7	50
Canton-Kowloon (Chinese section)	4 ft. 8½ in.	89	13	64
Han-Tueh-Chuan	.....	...	...	...
Hankow-Szechuan (Hankow-Ichang section)	.....	16	...	...
Kaifong Honan	4 ft. 8½ in.	353	26	806
Kin-Han	4 ft. 8½ in.	841	147	3,024
Kirin-Changchun	4 ft. 8½ in.	79	13	142
Lunghai-Pienlo	.....	234	...	...
Pekin-Kalgan and Changsui	4 ft. 8½ in.	270	60	843
Shanghai-Hangchow Ningpo	4 ft. 8½ in.	168	...	...
Shanghai-Nanking	4 ft. 8½ in.	203	33	424
Shantung	4 ft. 8½ in.	295	...	...
Swatow and Chao Chou	4 ft. 8½ in.	26.5	3	50
Taokow-Chinghua	4 ft. 8½ in.	93	10	160
Tcheng T'zi	Meter	155	57	...
Tientsin-Pukow	4 ft. 8½ in.	680	...	...
Chinese Eastern (Russian)	5 ft.	1,005	...	...

and lack of maintenance on the Grand canal, have been responsible for a series of most disastrous floods and their attendant famines. To properly conserve this river is one of the most urgent needs of the province, both for the above reason and because the usefulness of the river below its junction with the railway is very limited at present, as it loses itself in the very extensive but extremely shallow Hungtse lake.

Kiangsu and Chekiang

Kiangsu and Chekiang have an area of 45,000 sq. miles and 39,150 sq. miles respectively, and they produce beans,

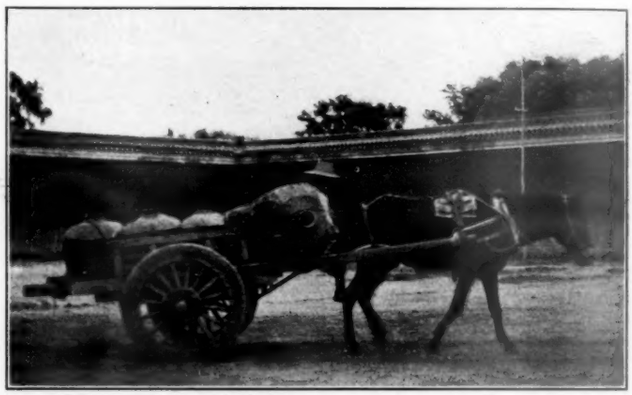


The Chinese Equivalent of the American Live Poultry Car

silk, tea and salt, among other things agricultural. Minerally these provinces are of small value. There are practically no railways within this area except the Shanghai-Nanking Railway in Northern Chekiang, whose usefulness is very limited, as it can never compete with a magnificent waterway like the Yangtse, with which it runs practically parallel. At present this line is merely a link in the trunk system and can only prosper when feeder lines are built. These provinces have, however, a most wonderful system of canals, of which there are some 50,000 miles. In addition, they are traversed north and south by the Grand canal, and east and west by the Yangtse river, so that there is no very crying need for railways in this section of the country.

Hupeh

Hupeh has an area of 70,450 sq. miles, and produces tea, hides, iron and coal. It is served by the Peking-Hankow Railway, which provides its outlet to the sea via the port of Hankow and the Yangtse. Water communication is indifferent, the only navigable rivers being the Yangtse forming the southern boundary of the province and the Han



A Chinese Cart Whose Destructive Effect on Roads Can Be Readily Appreciated

river, a tributary, flowing in a northerly direction from Hankow. This province is in the center of the modern iron industry of China and should, if properly developed, be of huge importance in the opening-up of the country.

Resources Enormous—Communications Poor

From the above very summary details it is obvious that the resources of this area are enormous, and that communications are extremely poor. The provinces are like watertight compartments as far as communications are concerned. At present there may be famine in one and excess in another, and no attempt is made to manufacture for more than local needs.

The railway situation in China can be summarized thus. With some 6,000 miles of railway in operation China proper has 0.3 miles of railway to each 100 sq. miles and 0.19 miles for each 10,000 people. For comparative purposes the United States has 253,000 miles of railway and one mile to each 360 people, Australia has one mile of railways for each 250 people, and the United Kingdom one mile to each 11 sq. miles. If the length of railway is summarized for the areas under consideration it will be found to amount to 2,679 miles, or one mile for each 127 sq. miles of country.

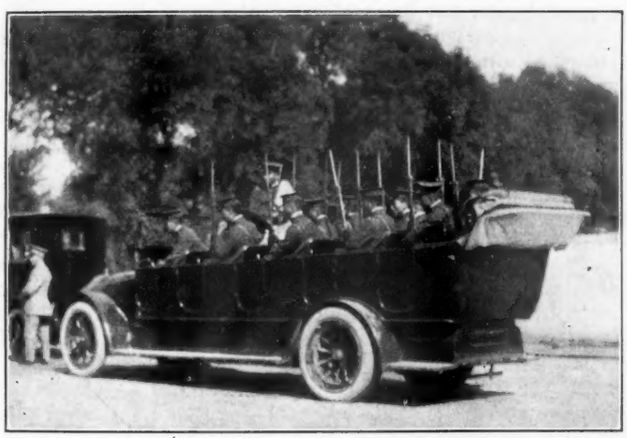
Water transport within this area is practically confined to the Yangtse river, which forms the southern boundary of the plain. This river, as far as Hankow, 600 miles from the mouth, is navigable for ocean-going steamers. The great drawback to the river is the enormous variation in the summer and winter levels, amounting to as much as 40 ft. at Hankow, and rendering navigation above this place difficult at low water. Above Hankow, in addition to the lack of water between Hankow and Ichang, there is also this difficulty coupled with the existence of rapids. However, small river steamers run between Hankow and Ichang all the year and between Ichang and Chunking when water permits; usually the river is closed from December to April. Ichang is 970 miles from the mouth of the river and Chunking about 1,400 miles.

This handicap makes a railway connecting Hankow and Chengtu, the capital of the enormously populous and rich province of Szechuan, one of the most urgent needs of the country. Another railway of some urgency is a line through the province of Shansi and Shensi to the capital of the isolated province of Kansu. All these provinces are said to be very rich minerally, but owing to lack of transport have no chance of development.

South of the Yangtse the country, with the exception of the province of Fukien, is less populous and much more mountainous. Railway construction would therefore be more expensive, and is less needed, as the bulk of the wealth and population is concentrated either on the southern side of the Yangtse valley or on the seaboard where there is water communication. China should, therefore, concentrate on the Great Plain, the development of which will entail least investment of much-needed capital and offers more certain returns than elsewhere.

Road Transportation

One form of transport has been altogether neglected in the above summary, namely, road transport, which is of very little value owing to the neglected state of the roads. There are said to be 2,000 imperial roads in China, but



And Then the Modern Automobile

with the exception of the courier roads these highways are mere tracks or footpaths. The chief roads radiate from Peking, connecting that place with the various provincial capitals. In some places these roads are paved with stone blocks of large size, and the ruins of signal towers and military posts at fixed intervals show that one time some importance was attached to them.

The upkeep of the roads is at the present time in the hands of local officials, each village taking responsibility for its own roads. Only what are considered, according to local ideas, necessary repairs, are undertaken, with the consequence that no real road maintenance has been done for some centuries. The roads as built are unmetalled, and the bridging scanty, so scanty in fact that the majority of bridges have only been designed to take the dry-weather flow, with the consequence that for most of the year the approaches are flooded. In addition, where country of any difficulty has been encountered, the road has degenerated into a mere footpath capable of taking only wheelbarrow, coolie or mule traffic, so that all car-borne goods have to be transshipped.

On all these so-called roads in the plain goods are circulated by mule, wheelbarrow or carts, but transport is rendered difficult and often impossible by the state of the roads, which are purely of the dry-weather order. Mule, donkey and wheelbarrow transport are universal all over China, but the cart is only met with north of the Yangtse, with the consequence that the roads in South China have degenerated into tracks of footpath width. Into the cart usually seen in North China the farmer will put a load of 1 ton to 1.5 tons, or rather more than is put into the English cart, which has a tire width of 5 in. against 2 in. in the Chinese cart. That roads in a country with 30 in. or more of rain per annum become impassable in the wet season is not to be wondered at, when their unmetalled state, their poor drainage and the traffic they carry are considered. North China has the great advantage of so severe a winter that even these roads would take the heaviest traffic, but this only holds from December to March, for the rest of the year the roads are as much dependent on weather for their usefulness as the rest of the country.

In the southern part of the Great Plain the cart is used; it is pulled by a trace, and carries the same loads as the northern cart, but has even narrower tires in a district with about twice the rainfall of the north. The wheelbarrow is even more destructive of roads, as it is, as often as not, unevenly loaded, causing the wheel to tilt and thus present less than the normal tire surface. The tire width is usually about 1¼ in., and the barrow often carries as much as 800 lb. The wheelbarrow is as much used for passenger traffic as for anything else; it will seat four people the charge being about 4 cents a mile. The wages of a wheelbarrow coolie vary from about 12 cents a day in North China to 16 cents in the Yangste valley.

Such ill-designed transport and abominable roads make the stagnation, ignorance and misery which exist within 30 miles of any railway or treaty port easily understandable. The civilizing influence of railways in this country needs little illustration, but it may be stated as an instance, that previous to the building of the Southern Section of the Tientsin-Pukow Railway, there were in existence three entirely different systems of coinage in a length of about 150 miles. The units of length and capacity varied from village to village, and most men believed their market town to be the biggest city in the world. This is typical of conditions in the closed portions of the country. It should also be stated that the roads all over the country are infested by bandits.

Finally, that this, the richest part of China, has repeatedly suffered from famine, is another proof of the wretchedness of communications. Thus, in 1877-8, a famine in Honan, Shansi, Shantung and Chili is estimated to have wiped out 8,000,000 people. Also in 1910-11, famine and floods in Northern Anhwei and Kiangsu were responsible for thousands of deaths. With regard to the cost of the various modes of transport, this necessarily varies somewhat in a country where labor increases in cost from north to south, wages in the Yangtse valley being about 50 per cent and in Canton 100 per cent higher than North China. The following are fair averages:

Type	Cost per ton-mile	Remarks
Cart	4 cents to 8 cents per ton-mile.	Maximum load, 1.5 to English cart 25 cwt., cost 15 cents per ton-mile.
Water	.2 to .4 per ton-mile.	Sailing boats up to 200 tons. An extra of 8 cents per ton for loading is charged.
Wheelbarrow	4 cents to 12 cents, according to state of roads.	Maximum load, 800 lb.
Mule	6 cents	Maximum load, 200 lb. to 270 lb.
Railway	.4	Cost to government.

It is of some interest to compare the cost of water and rail carriage in European countries:

Country	Water carriage per ton-mile	Rail carriage per ton-mile
Russia	.16 to .84 (Volga)	.98
Germany	1 cent to 2.63 cents	.110 to .706
Austria	1.74 cents (Danube)	
France	.282	.22 to 1.56 cents.
Belgium		.16 to 1.56 cents.

Considering that the price paid for labor generally is

about one-tenth that paid in Europe, transport in China is expensive, uncertain and under present conditions incapable of handling any large volume of traffic except on the railways, which are too few.

China Needs Roads and Railways

What China needs most are roads and additional standard gage railway lines, the roads to act as feeders to the railways and to enable these railways to be operated nearer to capacity. Narrow gage railroads have been proposed, but their savings over roads or standard gage lines are not sufficient to justify their use.

Turning now to the question of economy the most obvious one is for the country to build the railways with the revenue of the existing lines or to induce the people themselves to invest in railways under government control and guarantee. Foreign loans increase the cost of Chinese railways owing to commission and other charges, by $5,000 to $4,000 per mile, according to the cost of the line. It is believed that this, the greatest economy, might be to a large extent effected by the reorganization of the road system.

These roads might serve as feeders to the existing railways, and would be infinitely cheaper both in first cost and operation than branch lines. The financial position of the government railways shows that the majority of the lines are not worked to their full capacity. Thus, in 1915, of the 15 government railways, only five were run at a profit, the net profit on all the railways amounting to about $4,000,000, practically all of which is derived from the Peking-Mukden, Peking-Kalgan and Peking-Hankow railways. Even on these lines receipts have apparently reached a maximum. Not one of the railways, even the paying lines, has reached the maximum capacity for single-line traffic. It is then obvious that an enormous source of revenue lies in the development of the existing railways. Thus, if the present mileage of government railways would produce a net revenue of $3,000 per mile, the annual revenue from this source would amount to $11,040,000 sufficient to build 300 miles of new line per year. It should be stated that the net revenue per mile on the Peking-Mukden Railway amounts to $6,350 at present. This line does not traverse the richest part of the country by any means, so that a net revenue of $3,000 per mile can not be called an extravagant expectation.

Undoubtedly this development would be carried out most cheaply by road development, and in doing this China would only be following the example of European nations in the development of their overseas possessions. In every case road construction has gone hand in hand with the construction of railways, roads being built to tap those districts not sufficiently prosperous to be able to afford a railway. China can build first-class roads in this part of the country (the Great Plain) at a maximum cost of $5,750 per mile, proximity to quarries would reduce this to $4,500 per mile, and in districts where both government land and stone were available the cost might be still further reduced to $3,600. On this basis 800 miles of good roads could be built every year if only the present income from the railways were allocated to this purpose. Convict labor would still further reduce the cost if properly handled.

Roads should undoubtedly be built as pioneers of railways in the hill country south of the Yangtse. In this way the undoubtedly great mineral wealth of the province of Yunnan might be most cheaply developed; at present this province is dependent on mule and coolie transport over the most appalling roads for those districts off the metre-gage line, traffic on which is regularly interrupted in the wet season for weeks at a time.

With good roads and motor truck transportation encouraged by the government, it is estimated that freight could be carried at a cost of something like 6 mills per ton mile.

Wages 22 to 30 Cents a Day

Should the government adopt this road policy, it will, at any rate, have given the people a chance of development they never had before. Easy access to the existing railway zones would be of enormous educational value, and would probably stimulate trades now stagnant or dying, while it would render easily possible the absolute suppression of the brigandage so rife everywhere at present.

The government would of necessity encourage the idea of motor traction. There is no difficulty about the supply of drivers and mechanics. The Chinese make excellent drivers, are fair fitters and, best of all, have no trade unions, strikes or eight-hour days. The Chinese mechanic is a sober, quiet, and quite contented person on his magnificent wage of 22 cents to 30 cents per day. Roads at a maximum cost of $6,000 per mile, of unlimited traffic-handling capacity, are undoubtedly a sounder investment than 2-ft. gage lines costing $8,000 per mile and with very limited capacity.

Narrow Gage Railways Not Justified

On standard gage railways the cost per ton mile would probably be about 4 mills, but on 2 ft. gage light railways it would more likely approach twice that amount. Narrow gage railways, can be constructed at from 7 to 12 per cent cheaper than standard gage railways, but their capacity is not great and transfer of freight is a comparatively costly matter even in China.

But what is most important is the fact that 2-ft. gage railways have no place in a populous and potentially rich country like China. When the enormous potential wealth, the high order of intelligence of the population, their great numbers and small wages are considered there is very little room for doubt that at no very distant date every railway in this area will be able to work at its full capacity. Breaks of gage should, therefore, on no account be tolerated here when the small savings which result are considered. The future must also be considered from a strategic point of view.

In connection with this gage question it is significant that the Japanese, at the close of the Russo-Japanese war, at once converted what is now the South Manchuria Railway from 3-ft. 6-in. gage to 4-ft. 8½-in. gage and shortly afterwards the 2-ft. 6-in. gage line from Antung to Mukden. The Japanese are also seriously considering altering all the lines in Japan from 3-ft. 6-in. to 4-ft. 8½-in. gage. China has already to cope with the gage question but not to any serious extent. All the lines not of standard gage are metre, and the only one in the Plain is the Cheng Tai Railway, but as this may be important in the future trunk system, and as the country traversed is minerally rich the break of gage is regrettable. This line is at present only 151 miles in length but was exceeding costly, the country being rather difficult. The line cost $57,500 per mile, whereas the standard-gage line from Peking to Kalgan which is through very heavy country cost $41,000 per mile exclusive of interest and financial charges.

Of other non-standard gage lines the biggest is the Franch Yunnan Railway of which 289 miles is in Chinese territory out of a total of 534 miles. This is an isolated system, and if ever connected up with the Burmese Railways there would be no break of gage. Another small metre-gage line is the Tsi-Tsi-Har Light Railway, 17 miles in length, which was built at a cost of $8,675 per mile in country similar to that in the Plain. It has 30-lb. rails and is run at a loss. China is thus not so far committed, at any rate, in the richest part of the country, to more than one gage and should, therefore, profit by the experience of the world which is undoubtedly against break of gage in a populous and potentially wealthy country.

Train Accidents in February[1]

THE following is a list of the most notable train accidents that occurred on the railways of the United States in the month of February, 1918:

Collisions

Date	Road	Place	Kind of Accident	Kind of Train	Kil'd	Inj'd
1.	Pennsylvania	St. Clair	rc	F. & F.	4	0
2.	Pennsylvania	Toledo	bc	F. & F.	1	2
2.	N. C. & St. Louis.	Nashville	xc	F. & F.	1	4
2.	N. Y., N. H. & H.	Bristol	rc	P. & F.	0	5
3.	Minn. & St. Louis.	Albert Lea	bc	P. & F.	0	18
†6.	Bangor & A.	Caribou	rc	F. & P.	4	21
*10.	M. K. & Texas.	Mangum	rc	F. & F.	2	3
22.	Central N. J.	Ashley	rc	F. & F.	2	5
†25.	Southern	Frost, S. C.	rc	P. & P.	12	30

Derailments

Date	Road	Place	Cause of Derailment	Kind of Train	Kil'd	Inj'd
8.	Pennsylvania	Greensburg	b. wheel	F.	1	4
17.	Missouri Pacific.	Guernsey, Ark.	malice	P.	2	0
†19.	Chicago, B. & Q.	Curtis	.....	P.	2	4
20.	Norfolk & W.	Chilhowie	b. truck	P.	0	10
21.	Pennsylvania	Major	d: track	P.	1	4
21.	Pennsylvania	Summerhill	b. spring	P.	0	0
25.	W. Maryland.	Georges Creek	ms	F.	0	0

Other Accidents

Date	Road	Place	Cause of Accident	Kind of Train	Kil'd	Inj'd
4.	Baltimore & O.	Hutton, Md.	d. eq.	F.	1	0
18.	Del. Lack & West.	Wayland	fire	P.	0	1

The trains in collision at St. Clair, Pa., on the first of February were an eastboard freight and a train consisting of a locomotive and a caboose. The freight had become uncontrollable on a steep descending grade and collided with the other train at high speed. Both engines were ditched and the caboose and 20 cars were wrecked. One conductor, one engineman and one brakeman were killed.

The trains in collision at Toledo, Ohio, on the 2nd, were a northbound freight of the Pennsylvania and a southbound freight of the Pere Marquette. One engine and several cars fell down a bank. One trainman was killed and two were injured. One of the trains had run past a signal set against it.

The trains in collision near Nashville, Tenn., on the 2nd were southbound freight No. 53, drawn by two locomotives, and a part of a preceding freight No. 55, sixteen cars of which had run back on a steep grade. These cars had been detached because of the inability of the locomotive to take the whole train to the top of the grade, and it appears that they were left standing without enough handbrakes set to hold them. One fireman was killed and four other trainmen were injured. Both of the locomotives and about fourteen cars of No. 53, as well as four cars of No. 55 were wrecked.

The trains in collision at Bristol, Conn., on the evening of the 2nd, were an eastbound passenger, standing at the station, and a following freight. The freight had become uncontrollable on a steep descending grade. Five passengers were slightly injured.

The trains in collision near Albert Lea, Minn., on the 3rd, were northbound passenger No. 5 and a southbound freight (Extra 450). Both engines and 3 cars were damaged. Ten passengers and 8 trainmen were slightly injured. The collision was due to the error of the conductor and the engineman of No. 5 in assuming that a train which they found on the side track at Manchester where they were to meet No. 450, was that train; whereas, it was No. 96.

The trains in collision on the Bangor & Aroostook near Caribou, Me., on the 6th, were an eastbound passenger, a snowplow ahead of the passenger train and another behind it. The leading plow had been losing time and was run into by the passenger; and a short time after this collision the second plow ran into the rear of the passenger train. Three passengers and one employee were killed and 18 passengers and three employees were injured. The first snowplow was running as extra (X142) from Houlton to Van Buren, 94 miles. Passenger train No. 9 followed, and had a copy of the orders given to the plow. The collision occurred about 15 miles north of Presque Isle, and two miles south of Caribou. The passenger train left Presque Isle at 10:27 p. m., ten minutes behind the plow. Extra 142 was running at about 15 miles an hour; the man in the rear car, attending the flanger, was killed and the flagman in the caboose was injured. Train No. 9, scheduled at 32 miles an hour, had run from Presque Isle at about 27 miles an hour. It was several hours late. The second plow, which was X59, left Presque Isle 40 minutes behind No. 9. It ran into the passenger train and killed three passengers and injured 21. The flagman of the passenger train was back a full half-mile on straight track, and had put torpedoes on the rail, but it is thought that they did not explode. There was much ice and the temperature was about 30 deg. below zero. The flagman swung a red lantern with one hand and held up a lighted fusee with the other; he threw his lantern at the engine; and all of these signals failed to attract the notice of the engineman of the plow. Inspectors for the Interstate Commerce Commission investigated this case on February 8. It appears that the engineman of the passenger train had no notice of the proximity of the train ahead, as the markers on the flanger were, it is believed, obscured by snow thrown up by the flanger itself.

The trains in collision near Mangum, Okla., on the 10th, were northbound freights No. 914 and No. 558. The leading train had been stopped because of failure of steam. Two cabooses at the rear of this train were wrecked and destroyed by fire. Two trainmen were killed and their bodies were destroyed in the fire. Three other trainmen were injured. The cause of the collision was insufficient protection by flag.

The train involved in the collision at Ashley, Pa., on the 22nd, was a northbound freight which had become uncontrollable on a steep descending grade. It collided with a standing locomotive in the yard at Ashley and the crash included also four other standing engines. The engines and about 30 cars were wrecked. The wreck took fire and 12 loaded cars were mostly burnt up. One trainman was killed and six were injured, one of the six fatally. The cause of the runaway was not determined; but the brakes had been properly tested, and there is no evidence that they were not properly managed. The only theory that will account for the inability of the engineman to control the train is that an angle cock had been closed or partly closed.

The trains in collision at Frost, S. C., on the 25th, were southbound passenger trains, a local train which had been stopped because of failure of an air hose being run into at the rear by a following through train. Twelve passengers were killed and 30 were injured. The cause of the collision is said to have been the failure of the leading train to protect itself by torpedoes; that the flagman had been back a sufficient distance but had returned to his own train without placing the audible signals, and the express train came on just as the local was starting.

The train derailed near Greensburg, Pa., on the 8th, was an eastbound freight, consisting of a locomotive, 39 cars, 2 helping engines and a caboose. One of the locomotives fell down a bank and an engineman, fireman, conductor and two brakemen were injured. The engineman and fireman were scalded, the former fatally. The cause of the derailment was a broken wheel on one of the cars.

The train derailed near Guernsey, Ark., on the 17th, was northbound passenger No. 6. No passenger cars ran off and no passengers were injured. The engineman and one tres-

[1] Abbreviations and marks used in Accident List:
rc, Rear collision——bc, Butting collision——xc, Other collisions——b, Broken——d, Defective——unf, Unforeseen obstruction——unx, Unexplained——derail, Open derailing switch——ms, Misplaced switch——acc. obst., Accidental obstruction——malice, Malicious obstruction of track, etc.——boiler, Explosion of locomotive on road——fire, Cars burned while running——P. or Pass., Passenger train——F. or Ft., Freight train (including empty engines, work trains, etc.)——Asterisk, Wreck wholly or partly destroyed by fire——Dagger, One or more passengers killed.

passer were killed. The cause of the derailment was malicious tampering with a switch.

The train derailed near Curtis, Neb., on the 19th, was an eastbound passenger. Two coaches were overturned, and two passengers were killed and four injured.

The train derailed at Chilhowie, Va., on the night of the 20th, was eastbound passenger No. 42. Five passengers and five employees were slightly injured. The cause of the derailment was the failure of a baggage-car truck equalizer.

The train involved in the accident at Major, Pa., on the 21st, was a southbound passenger. The only vehicle derailed was a freight caboose at the rear of the train, which ran off the track and fell down a bank. One brakeman was killed and four other trainmen were injured. The cause of the derailment was settlement of track due to recent heavy rains followed immediately by a badly heaved condition due to zero weather, resulting in an irregularity of about 3 inches in the surface.

The train derailed at Summerhill, Pa., on the 21st, was westbound passenger No. 25. The train was running at high speed and the engine and seven cars left the rails, but the injuries to persons were reported as slight. The cause of the derailment was a broken trailer-truck spring on the engine.

The train involved in the accident at Georges Creek Junction, Md., on the 25th, was an eastbound freight. The engine and one car had been detached and 59 cars left standing on a grade had not been properly held by hand brakes and they ran away, most of the cars being thrown off the track at a curve. Most of them were loaded with coal.

The train involved in the accident near Hutton, Md., on the 4th, was eastbound passenger No. 46. A connecting rod was broken and the boiler was punctured; the fireman was fatally scalded.

The train involved in the accident near Wayland, N. Y., on the evening of the 18th, was an eastbound passenger. An express car was badly damaged, and its contents destroyed by a fire which is supposed to have been caused by the explosion of an oil lamp. The car was of steel. The express messenger was partially asphyxiated.

Electric Car Accidents.—The most serious electric car accident reported in February was a rear collision on the elevated line of the Brooklyn Rapid Transit Company, Brooklyn, N. Y., at Oxford avenue, February 3, in a fog, when 37 persons were injured, including a number of passengers standing on the station platform. Only three of the injured had to be sent to hospitals.

Shippers Required to Own and Maintain Industry Tracks

DIRECTOR GENERAL McADOO on March 26 issued General Order No. 15 prescribing the following requirements to be observed in respect of the construction, maintenance and operation of new industry tracks, and in respect of the operation and maintenance of existing industry tracks:

1. As to new industry tracks:

(a) The industry shall pay for, own and maintain that part of the track beyond the right of way of the railroad.

(b) The railroad company shall pay for, own and maintain that part of the track on the right of way from the switch point to the clearance point.

(c) Generally speaking, an industry shall pay for and maintain (although in special cases the railroad company may do so) and the railroad company shall own, that part of the track on the right of way from the clearance point to the right of way line.

(d) If the industry fails to maintain in reasonably safe condition the part of the track which it is required to maintain, the railroad company may disconnect the track or refuse to operate over it when not in such condition.

(e) The railroad company shall have the right to use the track when not to the detriment of the industry.

(f) The foregoing terms and conditions should be embodied in a written contract between the industry and the railroad company.

2. Where existing industry tracks are not covered by written contracts, they shall be maintained and operated in accordance with the provisions stated in paragraph 1 hereof.

3. Where industry tracks are covered by written contracts, such contracts shall be adhered to until otherwise ordered; but where any such contracts appear to work inequalities or injustice the circumstances should be brought to the regional director's attention, who will report thereon to the director general, if conditions seem to warrant.

4. The requirements of state statutes and of state commissions in respect of the construction, maintenance and operation of industry tracks shall be complied with, but in cases where such compliance involves what appears to be an unreasonable burden upon the United States Railroad Administration the circumstances should be brought to the attention of the regional director, who will report thereon to the director general if the conditions seem to warrant.

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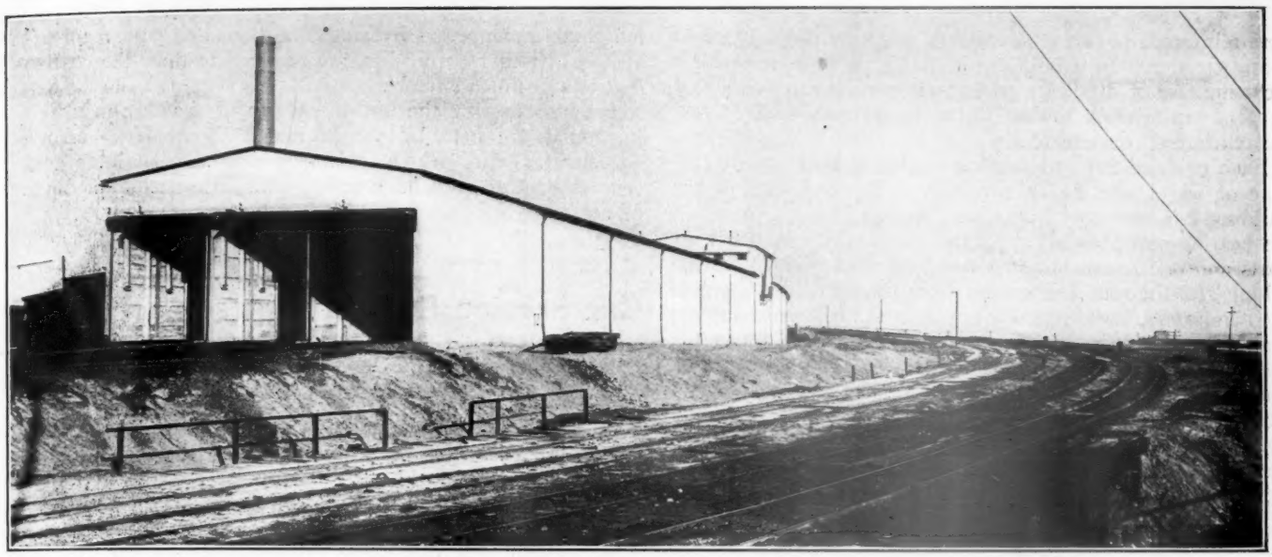
A Motor Truck on Rails

Photo from Underwood & Underwood, N. Y.

New Zealand Troops Entrained



Side View of Thawing Plant at South Amboy, N. J.

A Modern Plant for Thawing Coal in Cars

Severe Winter Has Emphasized the Difficulty of Unloading Materials Shipped in Open Top Cars

By Scott W. Linn,
General Contractor, Cleveland, Ohio.

THE UNUSUAL CONDITIONS EXISTING THIS WINTER as to the great demand for materials and finished products on one hand and the difficulty in producing and moving these products on the other have emphasized a number of problems which in previous years have been considered of minor importance. The specific causes of most of these troubles are perhaps due to circumstances over which the individual has little or no control. Scarcity of labor and prolonged severely cold weather have had much to do with the delay in moving materials from producer to consumer, and very little can be done on short notice to offset the retarding effect of either of these conditions. Expense and delay in handling materials is not due entirely to the inability of the carrier to make prompt delivery, but is often supplemented and greatly increased by conditions at terminals and other points of delivery.

In winter, freezing of these materials adds greatly to the cost and delay of unloading of coal, ore, sand, gravel or other materials which are usually shipped in open top cars. When these commodities are shipped any considerable distance or are held on cars for several days, they are in a more or less frozen condition depending on the severity of the weather and the amount of moisture in them. The percentage of moisture held in the materials varies greatly according to the coarseness or fineness of the material. A car of sand freezes harder than a car of stone. Crushed bituminous coal or finely divided anthracite coal will freeze harder than the coarser grades of either.

At tide water coal shipping ports, the handling of frozen coal forms one of the most serious problems in winter operation. It is necessary at most of these ports where coal is unloaded from cars to boats by car dumper that the work be carried on in winter weather at about the same rate as in summer. Much of the coast towns' supply of coal depends on shipment from these ports. Various schemes for thawing coal in the cars have been used, most of them without great success from an economical operating standpoint. The plan mostly used until about seven years ago was the so-called point system. Thawing was attempted by driving gas pipes into the frozen coal and introducing hot steam into the coal through these pipes. This was an expensive and awkward method and was attended by considerable danger to workmen as well as carrying the objection that the coal was left in a saturated condition.

The thawing plants operated by the Eastern Coal Dock Company at its coal unloading plants at Philadelphia and at South Amboy, N. J., have been successful in producing satisfactory results economically. The unloading equipment at South Amboy consists of two McMyler car dumpers located on Pennsylvania Railroad property and are under the management of D. W. Reed, superintendent. Two thawing plants are in use at this place. The first, built in 1911, is a wooden building, 500 ft. long, with two rooms longitudinally through the building, each room containing one track. This plant has thawed an average of over 500,000 tons of coal each winter since it has been in operation. The principal objections to the use of a frame building for this purpose appear to be the rapid deterioration of the wood under the high temperatures carried and the fire hazard attending such construction.

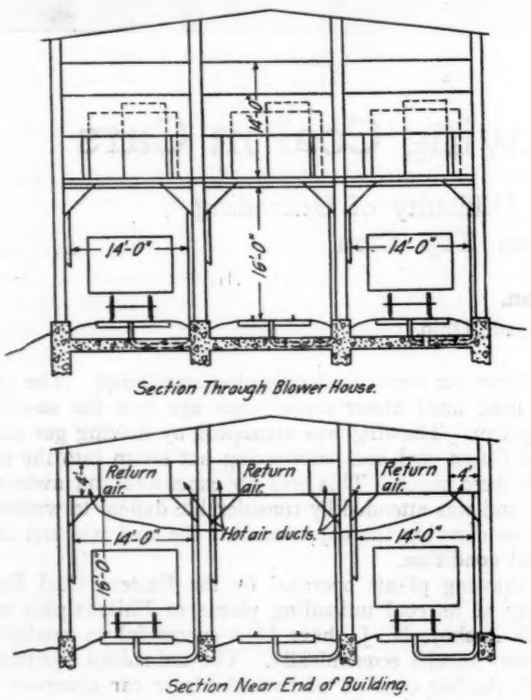
The latest thawing plant was put in operation in January, 1917. It is the same in principle as the other hot air plants but embodies a more modern type of building construction. The latter plant is a building 570 ft. long with three rooms, each containing one track. The building was constructed on a new fill, a part of which occupied the location of a former slip which had been used at one time for the storage of boats when trestles were used for unloading coal at Amboy.

The building is of pre-cast unit concrete construction and all members were cast in a yard near by. The structural members comprise columns, girders, beams, roof slabs and slabs for walls, ceilings and various partitions. All parts

were reinforced to suit requirements and were properly cured before erection. In a building of this type there are such a great number of duplicate parts that erection can be carried on very rapidly. A row of piling under each wall carried the reinforced concrete foundation.

Each room of the building has an inside horizontal clearance of 14 ft. and 16 ft. vertically. In the center of the building is a two-story part about 50 ft. in length, in which the heating and blowing apparatus is located. Two hot-air ducts and one return air duct for each room lie between the ceiling and the roof and extend from the apparatus room to each end of the building. Openings in the bottom of the hot air ducts connect with flues extending downward along the walls and under the track. These flues are spaced about 5 ft. center to center. Kinnear rolling steel doors are used for end closures.

Steam is brought from the boilers about 400 ft. distant to the apparatus room. Water of condensation from the heaters



Sections Through the Thawing House

is returned to the boilers for feed water. The heaters and blowers are of B. F. Sturtevant make and are of sufficient size to provide a frequent change of air in the building at a temperature of 250 deg. for the air as it leaves the heaters. The blowers are the double discharge type and are arranged to blow through the heaters into the hot air ducts. Heated air is carried the full length of the building through the ducts and down through the flues and is discharged upwardly toward the bottom of the cars.

The air after contact with the bottom, sides and ends of the cars, enters the return air duct in its passage back to the blowers for re-heating. Frequent openings in the return air duct admit the air. It has been found that better results in circulation are had when the return air openings near the center of the building are closed and air is admitted at intervals some distance from the center and toward the ends of the building. The system of circulation and re-circulation gives a very uniform distribution of hot air in the building so that the material in cars is thawed well in from all surfaces.

This plant has a holding capacity of 42 cars each 40 ft. long and, under severe freezing conditions and with the average coal, from 1½ to 2 hrs. are required to thaw the coal so that it will unload freely.

Patents covering the hot air system of thawing materials in transit are held by the Walter S. Newhall Company, Cleveland, Ohio, which company was the engineer and general contractor in the design and installation of these plants.

Car Service Section Urges the Sailing Day Plan

THE CAR SERVICE SECTION of the Railroad Administration has issued a bulletin to all railroads requesting those that have not already adopted the plan to make immediate study of the adoption of the so-called "Sailing Day Plan" in the handling of less than carload freight in order to effect further economical use of freight equipment. The bulletin says that some railroads have found the arrangement productive of very good results, as indicated by the figures furnished to the car service section by some of the lines that have adopted the method at some of their larger stations. Some examples of the successful operation of this plan are given in the circular, as follows:

During the month of October the Buffalo, Rochester & Pittsburgh effected a decrease of 41 per cent in cars used and an increase of 83 per cent in weight. The scheduling of local service for intermediate stations three instead of six days per week made it possible to effect a reduction of 10 local freight runs.

On the Boston & Maine, during the first week of October, 1917, which was prior to the adoption of the "Sailing Day" plan, at 13 stations 3955 cars were loaded with 30,761 tons of freight, an average of 7.77 tons per car, while for the week ending December 7, 1917, there was loaded at the same stations 3601 cars with 31,096 tons, an average of 8.63 tons per car, resulting in a saving of 354 cars, or 8.9 per cent, and at the same time an increase in track standing space at the platforms.

The New York Central for four months preceding December 1, 1917, handled 3,154,699,000 lb. of l. c. l. freight, using 221,688 cars. The average loading per car in the period named for 1917 was 14,230 lb. per car, and in the same period in 1916 was 10,279 lb. per car, an increase in 1917 per car of 38.44 per cent or an average saving per month of 21,305 cars.

The New York, New Haven & Hartford reports a saving of 780 cars a week, with standing room at freight houses materially improved. Two freight trains and entire crews have been discontinued and several train movements in the aggregate have been eliminated by reduction in cars to be handled, particularly in prevailing tonnage direction where trains are started only when full tonnage is available.

On the Pennsylvania Railroad 600 cars have been saved daily, and local train service has been reduced on a number of divisions. The former daily set up has been reduced to tri-weekly, semi-weekly and weekly service, according to the volume of business, which results in a saving of 25 per cent of track standing room. It is also estimated that 25 per cent of the freight is kept out of transfers.

The bulletin says: "There is no plan incapable of improvement from time to time and the results to be obtained in efficiency, reduction in train units, decrease in cost, increasing despatch and elimination of freight congestion, will be of material consequence; and the Car Service Section suggests that the arrangement be given very prompt and careful consideration; and . . . immediate study is requested, with definite outline of your plans."

Forms for Equipment Inventory

THE FORMS for an inventory of equipment are those which L. F. Loree sent to the Railroad War Board before it was superseded by the Director General. Mr. Loree made the suggestion that the War Board request all class A roads to include an inventory in such detail as is here shown in their annual reports to stockholders. See editorial comments elsewhere in this issue.

ENGLISH RAILWAYMEN CULTIVATE LANDS.—Six thousand employees of the London & South-Western cultivated plots of land by the side of the line last year.

CLASSIFICATION			TOTAL			
Item	TYPE	Tractive Power In Pounds	Number	Tractive Power In tons.	Weight on Drivers In Tons	Weight of Engine and Tender in working order - In Tons
1	Passenger, Steam	20,000 or less				
2	" , "	Over 20,000				
3	" , "	All				
4	Freight, "	40,000 or less				
5	" , "	80,000 or less				
6	" , "	Over 80,000				
7	" , "	All				
8	Switch & Work, "	20,000 or less				
9	" " , "	40,000 or less				
10	" " , "	Over 40,000				
11	" " , "	All				
12	All Steam	All				
13	Passenger Electric	All				
14	Freight "	"				
15	Switch & Work"	"				
16	All Electric	"				
17	Grand Total	"				
18	Average Combined Passenger and Ton Miles per annum per pound of locomotive tractive power owned					

Inventory of Steam Railway Locomotives

	CLASSIFICATION							Number of Cars and type of Construction				TOTAL	
		Number of Cars of Marked Capacity in Pounds											
Item	Type	Less than 60,000	60,000 to 80,000	80,000 to 100,000	100,000 to 140,000	140,000 and over	TOTAL	All Wood	Steel Underframe	All Steel	TOTAL	Light Weight In Tons	Marked Carrying Capacity In Tons
1	Box												
2	Stock												
3	Refrigerator												
4	Tank												
5	All Closed												
6	Gondola												
7	Hopper												
8	Flat												
9	All Open												
10	All Other												
11	GRAND TOTAL												
12	Average Freight Ton Miles per annum per ton of Freight Car Carrying Capacity Owned												

Inventory of Steam Railway Freight Train Cars

	CLASSIFICATION		TOTAL						
			Number				Carrying Capacity		
Item	Type	Length Over Body End Sills in Feet	All Wood	Steel Underframe	All Steel	Total	No. of Passengers	Tons of Commodities	Light Wgt. in working order - tons
1	Coach or Chair - first class	Less than 60'							
2	" " - " "	Over 60'							
3	" " - Second " & Emigrant	All							
4	" " and Combination	"							
5	Parlor	"							
6	Sleeping	"							
7	Dining	"							
8	Business	"							
9	All Passenger Carrying	"							
10	Postal, Express & Baggage	Less than 60'							
11	" " "	Over 60'							
12	Miscellaneous	All							
13	All Commodity Carrying	"							
14	Total	"							
15	Passenger, Motor	All							
16	Commodity, Motor	"							
17	Total, Motor	"							
18	Grand Total	All							
19	Average Passenger Train Car Miles per annum per car owned.								

Inventory of Steam Railway Passenger Train Cars

Freight Operations for December

THE BUREAU OF RAILWAY ECONOMICS has issued its monthly report of freight operations of steam railways for the month of December and the combined months April to December, 1917, in the series which was compiled for the Railroads' War Board. Revenue ton miles handled in the month of December amounted to 29,050,017,536, a decrease of 2.6 per cent, as compared with December, 1916. Total freight train miles decreased 6 per cent, loaded freight car miles decreased 11.7 per cent, and empty freight car miles decreased 15.9 per cent. Freight locomotive miles decreased 5 per cent. The revenue ton miles per freight locomotive amounted to 943,979, a decrease of 2.7 per cent, and the revenue ton miles per freight car amounted to 12,509, a decrease of 6.1 per cent. The average number of freight locomotives in service was .2 per cent greater than December, 1916, and the average number of freight cars 3.8 per cent greater, and the tons per train increased 3.3 per cent, while the tons per loaded car increased 10.2 per cent, but the effect of the congestion in eastern territory is reflected by a decrease in the average miles per locomotive per day from 65 to 61.6, a reduction of 5.2 per cent, and a decrease in the average miles per car per day from 25.4 to 21.3, or 16.1 per cent. There was a reduction in the average mileage per car and per locomotive in all districts.

For the combined nine months, April to December, which marks the period during which the Railroads' War Board was in existence, there was an increase in revenue ton miles of 9.8 per cent, while the number of freight train miles increased only 2.6 per cent and the loaded freight car miles increased only .6 per cent. The revenue ton miles per freight locomotive show an increase of 8.6 per cent and per freight car of 6.7 per cent. The average number of freight locomotives in service shows an increase of 1.1 per cent and there was a reduction of 7.4 per cent in the average number of freight locomotives in shop or awaiting shop. The average number of freight cars in service increased 2.9 per cent, while the average number of freight cars in shop or awaiting shop decreased 3.9 per cent. The tonnage per train was 667 as compared with 624 in the corresponding period of 1916, an increase of 6.9 per cent. The tonnage per loaded car was 27.3 as compared with 25, an increase of 9.2 per cent. The average miles per locomotive per day increased from 66.6 to 67.9, an increase of 2 per cent, but the average miles per car per day had decreased 1.8 per cent, from 27.3 to 26.8. The percentage of empty car miles increased from 29.8 to 30.

Cash Disbursements

DIRECTOR GENERAL MCADOO has issued the following circular to the railroads:

Unless and except so far as reasonable showing shall be made to the contrary, the Director General will proceed upon the theory that the total of accounts "cash," "demand loans and deposits," and "time drafts and deposits," appearing on the railroad company's books at the close of business December 31, 1917, was for railroad purposes and is therefore subject to the control and order of the Director General. If, and to the extent that, the Director General shall find it appropriate, in the mobilization and unification of the resources of the railroad companies, to transfer any such cash from the control of the officers of the company, full accounting provision will of course be made for the protection of the company's rights.

The Director General will entertain any applications which may be made to him to show that any portion of the cash on hand December 31 was not for railroad purposes and should not be under the Director General's control.

Carriers subject to federal control must not make disbursements out of the cash represented by the accounts above designated as of December 31, 1918, except as follows:

(a) The payment of interest maturing up to and including July 1, 1918, upon obligations of the railroad company.

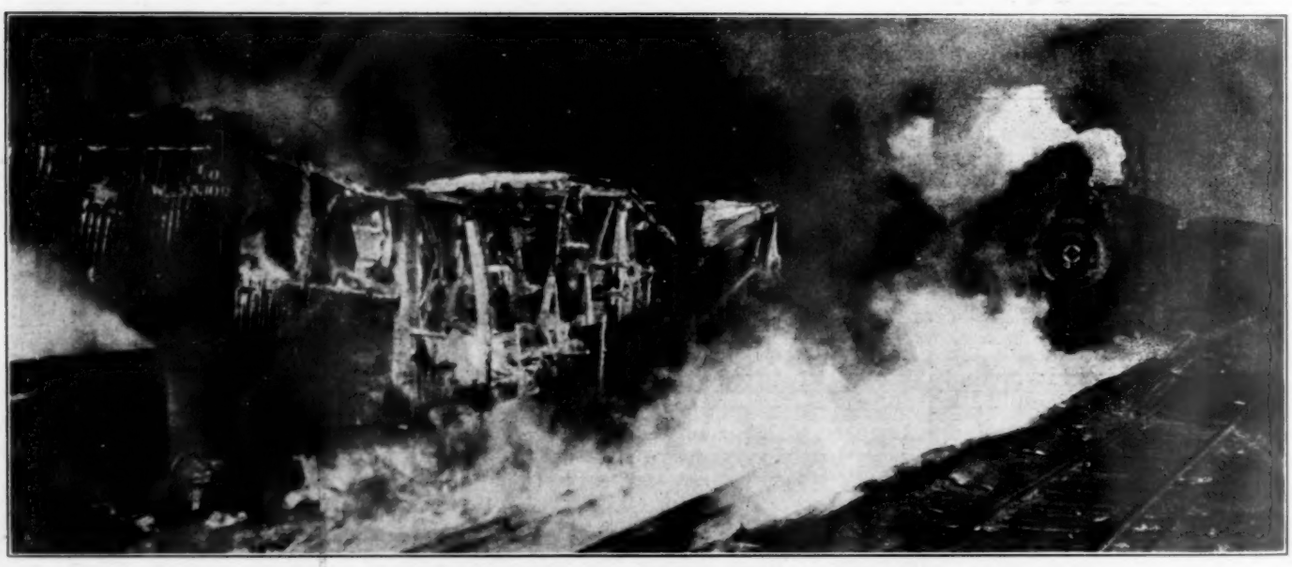
(b) The payment of dividends not in excess of regular rate of dividends during the three years ended June 30, 1917, in the regular installments, according to the established practice of the company, payable up to and including July 1, 1918.

(c) The payment for materials and supplies for railroad use and for other expenses of operation. Operation to include, both upon the debit and credit side, joint facility rents, car hire, and all items of that character which accrue out of the operation of the property.

(d) Taxes, including war taxes.

(e) Expenditures for permanent improvements.

Application will be entertained for any payments which the carrier may desire to make out of cash on hand December 31, 1917, for purposes other than those above specified or, as to clauses *a* and *b*, at dates beyond July 1, 1918.



In the Midst of the Fire at Jersey City Tuesday. Photo by Central News

General News Department

Among consumers of fuel oil, classified in a circular which has been issued by the Fuel Administration, prescribing the order in which manufacturers and distributors are required to give priority, railroads are placed first.

The sub-committee on war tax of the Association of American Railway Accounting Officers has issued a pamphlet of 35 pages giving final rules and regulations promulgated by the commissioner of internal revenue on the application of the war revenue tax to the transportation of persons and property.

Use of varnish is a subject on which Director-General McAdoo desires information. He has addressed to the railroads a questionnaire asking information concerning the use of varnish on cars and locomotives during the calendar year 1917. Reports must show the brand, vendor, manufacturer, amount used for various purposes, total cost and price per gallon.

No railroad legislation at this session, or until after the war, is the decision of the Committee on Common Carriers in the Kentucky legislature; and this rule has been confirmed by a vote in the Senate, where a bill to extend the powers of the State Railroad Commission was laid on the table; but not until after a discussion in which the "strangle-hold of the railroads" on the business of the state was emphasized with all due seriousness.

In an explosion and fire at the Jarvis warehouse, Jersey City, N. J., on March 26, the repair shops of the Erie Railroad, on the north side of the main line near the Jersey City passenger station, were destroyed; estimated loss, $300,000; loaded freight cars to the value of $200,000 (estimated) were also destroyed. The explosion caused, altogether, damage to the amount of about $1,500,000, and fire brands were blown across the river to New York. The Erie station and ferry-house on the New York side were damaged $8,000. The shop buildings destroyed were old, and it is understood that the company will not rebuild on the same site.

Ownership of coal mines is the subject of a circular which Director-General McAdoo has issued to the railroads. It calls for reports concerning ownership, operation or control of anthracite, bituminous and lignite mines, lands and operations. Each road is required to report regarding lands owned, leased or controlled which are not under development and which are under development; expenses of operation, cost per net ton of coal, proportion of production used for other than railroad purposes, etc. Names of railroad officers or directors who are interested directly or indirectly in any of the lands or mines are also asked.

"Whole-hearted and loyal support to Director-General McAdoo, and the officers of the New York, New Haven & Hartford Railroad," is the keynote of resolutions which have been adopted by the lodges of the Order of Railroad Telegraphers on the New Haven road, and sent to Mr. McAdoo. The telegraphers have "resolved not only to do their bit but to do their best," in maintaining the highest standard of efficiency. Mr. McAdoo, in a reply sent to L. J. Ross, general chairman, expresses his deep gratification. "Such a spirit," says Mr. McAdoo, "cannot fail to aid our beloved country immeasurably, and to enable it to become victorious in this great war for America's vital rights and for the freedom and democratization of the world."

The Chestnut Hill branch of the Pennsylvania Railroad is now completely electrified and electric trains are to begin running regularly next week. A test train was run over the line on March 22. This branch is about six miles long and the passenger trains run through over the New York division, and the main line to and from the Broad Street Terminal, Philadelphia, twelve miles. Connection with the main line, electrified two years ago, is made at Zoological Gardens. The cost of this electrification has been about $1,500,000. The work has taken a little more than two years and has cost 20 per cent more than was estimated at the beginning. Difficulty in procuring materials has been one cause of delay in completion. In connection with the electrification and the installation of position light signals, twenty signal bridges were put up.

Track Elevation Work in Chicago Checked

The Chicago council committee on track elevation, which was prepared to recommend track elevation work in the city to cost about $5,000,000, has been requested by W. G. McAdoo, director-general of railroads, to defer further consideration of this work until the conclusion of the war. The elevation work was planned to be done in the southwestern section of Chicago on the Grand Trunk Western, the Indiana Harbor Belt, the Chicago River & Indiana and the Atchison, Topeka & Santa Fe. Mr. McAdoo's ground for his recommendation was that railroad improvements involving large expenditures should be avoided when they interfere with the execution of work absolutely essential to the successful conduct of the war.

Embargo on Movements East of Chicago Removed

R. H. Aishton, regional director of western railroads removed the embargo on carload freight destined for points east of the Illinois and Indiana state lines on March 20, after it had been in effect 10 days. The movement of freight to points east of Chicago is now limited only by the capacity of the eastern lines. The special attention which the western lines have been giving the movements of grain during the past two months has evidently taken care of the large quantities of grain which demanded transportation to prevent deterioration. At any rate, Mr. Aishton has recommended to Mr. McAdoo that he discontinue giving preference to grain in the loading of box cars, except as to wheat from points of origin to primary markets.

Reasons for Mail Delays

E. J. Ryan, president of the Railway Mail Association, which represents employees in the railway mail service, contributes the following in a Washington newspaper to the discussion of the reasons for delays in the mails.

"The statement that the delay of mails is only between New York and Washington is an error, as reports show that mails are being delayed practically throughout the entire service. Delayed mails exist on lines not so congested as the railroads operating on the Atlantic seaboard. The fact is that the policy of curtailing space for distributing mails en route in the railroad mail cars, and also reductions in the number of railway postal clerks, who performed this very important work of the postal service, is the real cause for the present situation. The war is not to blame.

"This policy has been adopted and was actually in effect for months before this country entered the struggle and before the abnormal demands arose which now burden the transportation system. Even now, there should be but very little, if any, delay in mails upon their arrival in Washington. Mail cars are attached to passenger trains, not to freight trains. Frequent regular train service exists between New York and Washington.

"Six trains with mail cars arrive in Washington each day from New York. Twelve trains carrying mails in closed pouches, but without mail cars or clerks, arrive each day from New York. Eight trains carrying mail, mail cars and clerks, leave Washington each day for New York, and also eight trains carrying closed pouches without mail cars or clerks."

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF DECEMBER, 1917

Name of road.	Average mileage operated during period.	Operating revenues			Operating expenses						Operating ratio.	Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
					Maintenance of										
		Freight.	Passenger.	Total (inc. misc.)	Way and structures.	Equipment.	Traffic.	Transportation.	General.	Total.					
Arizona Eastern	377	$287,343	$48,667	$354,587	$44,297	$35,665	$2,641	$25,930	$15,122	$178,737	50.41	$175,850	$74,840	$100,991	—$24,813
Central of Georgia	1,918	940,289	538,790	1,636,903	35,808	227,586	39,917	538,666	45,676	885,897	54.12	751,005	123,315	626,624	129,660
Chicago, Burl. & Quincy	9,373	7,263,162	2,181,259	10,388,402	434,994	2,014,147	128,020	4,590,255	238,978	7,524,755	72.43	3,863,647	1,248,843	1,585,372	—2,276,496
Chicago, Ind. & Louisville	654	451,390	204,500	750,234	68,165	176,385	32,988	319,013	20,953	617,930	82.36	132,304	32,598	99,650	—109,314
Colo. & Sou	1,103	750,724	169,775	991,071	81,065	116,810	10,298	355,252	30,905	649,085	65.49	341,986	.....	341,836	10,910
Ft. Worth & Denver City	454	411,412	208,775	654,810	41,359	106,471	6,534	265,535	17,877	440,655	67.30	214,155	43,256	170,896	—112,421
Illinois Central	4,765	5,021,210	1,813,763	7,398,783	614,431	1,495,249	137,624	2,904,725	199,757	5,397,388	72.95	2,001,395	932,636	1,067,954	—743,057
Kans. City Terminal	23	.....	.....	95,874	8,536	16,441	.....	47,486	1,309	74,749	77.97	21,124	58,530	—37,406	—70,568
Lehigh Valley	1,446	3,051,911	453,647	3,862,839	—38,144	1,051,253	104,921	2,366,097	108,037	3,603,705	93.29	259,134	96,091	162,913	—466,214
Louisville & Nashville	5,074	4,530,453	1,863,702	6,866,585	786,398	1,341,393	147,958	2,480,562	120,615	4,893,121	71.26	1,973,465	1,158,660	812,282	—1,254,067
Mo., Okla. & Gulf	332	125,332	35,896	169,469	20,893	36,408	3,033	89,463	6,996	156,984	92.63	12,484	9,079	3,321	—22,185
Mo. Pacific	7,301	4,155,350	1,682,094	6,780,313	666,955	1,122,249	135,457	2,632,489	160,733	4,733,085	69.81	2,047,228	629,367	1,416,628	*
Nor. Sou.	907	256,397	133,625	416,262	37,112	60,599	8,154	176,547	19,310	301,825	72.51	114,437	15,000	99,328	—35,750
Ore. Short Line	2,306	2,087,504	570,490	2,866,620	257,280	329,655	37,378	714,988	70,861	1,451,858	50.65	1,414,763	435,058	909,176	99,299
Ore.-Wash. R. R. & N. W. Co	2,065	1,147,246	565,297	1,852,884	354,946	213,783	49,156	750,150	83,051	1,464,283	79.03	388,601	188,921	199,325	—238,039
St. Louis Southwestern	1,754	1,258,002	360,832	1,703,168	89,838	224,156	49,642	520,204	57,600	942,577	55.34	760,591	144,024	616,478	100,759
Staten Is. Rapid Trans. Co	23	51,066	47,728	105,337	2,696	8,033	1,669	63,139	6,000	81,536	77.40	23,801	12,311	11,483	—14,362
Trinity & Brazos Valley	368	93,853	20,318	11,881	21,066	27,130	2,604	46,766	8,099	105,663	88.93	13,147	10,959	2,188	155,481
Yazoo & Miss. Valley	1,381	1,146,018	583,781	1,810,053	188,756	314,394	22,618	578,093	43,309	1,160,521	64.12	649,532	83,602	565,204	—177,359
CALENDAR YEAR 1917															
Arizona Eastern	377	$3,340,816	$617,359	$4,269,650	$496,553	$424,379	$31,806	$928,134	$178,364	$2,135,142	50.01	$2,134,509	$361,169	$1,772,613	$199,940
Central of Georgia	1,918	10,097,953	4,253,700	16,024,537	2,149,641	2,672,947	480,492	5,258,902	500,905	11,045,849	68.93	4,978,688	876,423	4,091,536	367,850
Chicago, Burl. & Quincy	9,373	87,008,589	24,373,779	122,342,707	12,934,269	19,793,939	1,681,061	42,197,497	2,764,770	80,827,474	66.07	41,515,232	8,619,196	32,866,603	—6,232,384
Chicago, Ind. & Louisville	654	6,203,191	2,178,462	9,161,898	876,825	1,731,785	260,630	3,384,523	228,356	6,482,004	70.75	2,679,893	443,637	2,235,642	—235,274
Colo. & Sou	1,103	8,278,757	1,913,524	10,952,980	1,021,845	1,880,993	131,729	3,370,749	322,464	6,789,723	61 99	4,163,257	668,734	3,493,252	545,887
Ft. Worth & Denver City	454	4,444,135	1,743,811	6,546,863	550,412	1,127,333	89,399	2,015,834	214,106	4,032,634	61.60	2,514,229	463,256	2,050,860	—206,642
Illinois Central	4,766	63,126,728	17,099,135	87,144,786	11,289,315	18,214,178	1,332,011	29,076,858	2,083,165	62,339,834	71.54	24,804,952	6,186,365	18,606,217	1,846,978
Kans. City Terminal	23	.....	.....	1,131,294	112,680	176,063	.....	453,562	20,439	769,804	68.05	361,490	340,899	20,402	—250,542
Lehigh Valley	1,442	44,271,690	4,894,989	53,358,446	5,353,466	9,999,610	1,013,395	24,141,699	1,147,267	41,826,166	78.39	11,532,280	2,126,626	9,403,324	—2,876,454
Louisville & Nashville	5,072	55,678,079	16,374,643	76,907,387	9,289,234	14,852,774	1,556,848	25,615,286	1,555,654	52,998,759	68.91	23,908,629	5,542,795	18,352,153	—2,087,712
Mo., Okla. & Gulf	332	1,502,113	314,542	1,931,154	239,063	341,548	48,449	853,177	87,968	1,572,016	81.40	359,139	109,650	248,553	185,162
Mo. Pacific	7,299	34,017,609	9,643,194	47,193,409	6,283,162	7,343,934	959,365	15,962,148	1,045,852	31,711,061	67.19	15,482,349	2,763,867	12,710,281	*
Nor. Sou.	907	3,709,597	1,260,772	5,299,914	636,727	773,842	97,497	1,934,532	236,485	3,680,368	69.44	1,619,546	195,120	1,423,467	—79,776
Ore. Short Line	2,306	22,774,874	5,857,899	31,016,343	3,143,168	3,351,108	428,718	8,117,635	927,044	16,478,294	53.13	14,538,049	2,890,471	11,644,298	—244,374
Ore.-Wash. R. R. & N. W. Co	2,057	14,858,303	5,470,973	22,097,098	3,274,880	2,396,403	559,268	7,456,263	954,668	14,878,199	67.33	7,218,900	1,454,392	5,763,284	922,592
St. Louis Southwestern	1,754	13,062,975	3,284,490	17,309,657	1,777,729	2,915,460	564,420	5,031,343	590,452	10,896,860	62.91	6,412,797	1,075,096	5,336,371	1,422,737
Staten Is. Rapid Trans. Co	23	668,321	693,358	1,493,513	199,585	161,425	13,811	729,628	62,465	1,166,915	78.13	326,599	103,311	223,173	—135,901
Trinity & Brazos Valley	365	810,726	176,646	1,095,339	288,796	379,165	30,121	491,844	91,251	1,281,177	116.97	—185,838	71,979	—257,837	—68,031
Yazoo & Miss. Valley	1,382	13,510,734	3,678,701	18,152,123	2,926,571	3,020,219	262,925	5,852,462	452,308	12,470,133	68.70	5,681,990	1,272,454	4,406,115	—549,658

*Began operation June.

Railroad Liberty Loan Purchases

Director General McAdoo has issued a circular to the railroads calling for the following information regarding Liberty bonds: 1—State the total amount, if any, of Liberty Loan 3½'s, and *separately* of Liberty Loan 4's, bought by your company or subsidiaries, (a) as investment; (b) for employees. 2—State aggregate amount now held of each of said issues, (a) as investment; (b) for employees.

Of amounts of each issue disposed of by you, other than bonds disposed of to employees, please show: (a) amounts sold in the market, or through brokers; (b) amounts sold at private sale to investors; (c) prices realized for each lot sold; dates of sale.

Railroad Bill Signed by President

The railroad control bill was signed by President Wilson on March 21, immediately after the passage of the war finance corporation bill by the House. The President held the bill for a week because if there had been a failure of the finance corporation bill, which provides for loans to railroads and other corporations whose operation is necessary for the war, it would have been necessary to seek a larger appropriation than the $500,000,000 provided for in the railroad bill.

The war finance corporation bill had previously passed the Senate and is now in conference. It provides for a corporation of $500,000,000 capital stock to be owned by the government, with a board of directors consisting of the Secretary of the Treasury and four others. Under the Senate bill the corporation would be authorized to issue $4,000,000,000 of bonds, but in the House bill this was reduced to $2,000,000,000 and the corporation is to make loans or advances direct or through banks for the assistance of industries whose operations are necessary or contributory to the prosecution of the war. The bill also provides for a capital-issues committee to investigate, pass upon and determine whether proposed issues of securities are compatible with public interest.

Contracts for Exchange of Transportation for Advertising to Be Honored

Contracts for the exchange of intrastate passenger transportation for advertising, which are not repugnant to state laws, may be carried out, provided they do not extend beyond the present calendar year. This is announced in a modification of General Order No. 6 issued by Director General McAdoo. The order prohibited the issuance of free transportation except as expressly authorized by the federal law. The carriers, in obedience to the order, withdrew the passes or mileage books which had been issued for newspaper advertising.

It later came to Mr. McAdoo's attention that contracts for newspaper advertising to be paid for in transportation at a fixed rate had been made in various sections of the country; that mileage books had been issued pursuant to such contracts; and that the war tax thereon had been paid as required by law. The legality of such contracts and a number of other questions growing out of General Order No. 6 were thereupon referred to the Interstate Commerce Commission for consideration, and the commission advised the modification of Order No. 6 to the extent of permitting a continuance of contracts already made for the exchange of intrastate passenger transportation for advertising to the termination of such contracts, but in no instance beyond the end of the current calendar year. It is pointed out that transportation issued under such contract may not be used in connection with other transportation on any interstate journey.

Railway Business Association

Indications are that the special meeting of the Railway Business Association, called for April 8 in Chicago, will be well attended, replies to the invitations to the meeting having come in in a very satisfactory manner.

Those in charge of the meeting are making every effort to secure the attendance of members of every company engaged in the manufacture or sale of railway supplies, whether they are at present members of the association or not. As has been previously announced in the *Railway Age*, the discussion will deal with the matters of present great importance to the railway and supply field and consideration will be given to the idea of reorganizing the association to make it better fitted to deal with the new aspects of the railway situation.

Traffic News

Distribution of anthracite coal has been put in charge of a supervising committee, announced by the Fuel Administration on March 26: J. B. Dickson, S. D. Warring and W. J. Richards.

The Car Service Section of the Railroad Administration has found considerable delay in transmission of embargo revisions which are sent to zone chairmen by third-class United States, or railroad mail. It is desired that these notices be sent as first-class matter.

Cheap Sunday excursions from Philadelphia to seaside resorts in New Jersey are to be restored. Congressmen from New Jersey have appealed to Director-General McAdoo, and he has authorized the restoration of certain Sunday trains, run to accommodate round-trip passengers at low rates, which were taken off because of freight congestion early in the winter.

On Wednesday, March 20, the post-office department made an experimental run with a motor truck, carrying parcels, from Lancaster, Pa., to New York City, 180 miles, leaving Lancaster at 4:17 a. m. and arriving at New York 4:15 p. m. The merchandise weighed about 2,900 lb., and was made up mainly of eggs, butter and honey. About 20 gal. of gasoline was used and the postage paid on the goods was $31.61.

An embargo against all l.c.l. freight shipments to New York city, excepting perishable goods, foods, and other usual exceptions, was announced on March 23. It was concurred in by all of the trunk lines, and the notice, signed by George D. Ogden, chairman of the Freight Traffic Committee, said that it was to continue one week from Saturday night, March 23. Responding to recommendations presented by the Merchants' Association of New York, the railroads terminating in Manhattan have agreed to have freight stations open for the delivery of freight at 7 a. m., with cashiers and check clerks on hand; to allow consignees to take carload freight from piers after 6 p. m., and to pile inbound freight on the pier floor with more care, so that teamsters can locate their shipments more quickly. J. C. Lincoln, manager of the Traffic Bureau of the Merchants' Association, at the same time has issued an appeal to merchants and manufacturers to do their part towards reducing the unparalleled congestion of freight in New York stations.

Intermediate Rate Association

Representatives of the intermountain territory, including commercial organizations and state railroad commissions in the territory west of Denver, Colo., and immediately east of the Pacific Coast terminals, have organized the Intermediate Rate Association with the primary purpose of securing an amendment to the fourth section of the act to regulate commerce which will prohibit railroads from charging a higher rate for a shorter than for a longer distance—when the shorter haul is included within the longer and over the same line and in the same direction—for the purpose of bringing about a change in the freight rate adjustment to the intermountain territory which has long been the subject of constant litigation and controversy. Headquarters have been opened at Washington in charge of J. F. Shaughnessy, a member of the Nevada Railroad Commission, as president, and Charles W. Smith, commerce attorney, of Washington, as secretary. President Shaughnessy has issued a statement outlining the history of the transcontinental rate adjustment and the arguments in favor of the proposed amendment to the law. He declares that because of the discriminatory rate adjustment capital is withheld from investment in the intermountain territory and that this condition will continue even if the Director-General of Railroads should remove the discrimination during the period of government control unless there is a declaration by Congress that such a policy would be made permanent. Several bills have been introduced in Congress to amend the long and short haul clause so as to remove all discretion in the matter from the Interstate Commerce Commission and hearings have been held before the Senate Committee on Interstate Commerce since March 13. An active

campaign of letter-writing to Congress has also been carried on by the representatives of the intermountain territory.

Coal Production

The output of soft coal during the week ending March 16 was the largest since November 24, according to the weekly bulletin by the Geological Survey, Department of the Interior. The total bituminous production during the week ending March 9 is estimated at 11,228,000 net tons. The daily average for the week was exceeded in the week of January 5, but at that time the total production was reduced by the New Year holiday. The improvement has been made possible, the report says, by relief of the railroad freight congestion. Anthracite and coke, both beehive and by-product, reflect the increase in bituminous production. The total production for the week ending February 23 was 10,616,000 and for the week ending March 2, 11,111,000. Anthracite shipments arose to 42,207 cars, the largest since the week of December 1. Bituminous shipments by carloads on 121 roads have shown a steady increase since the week ending February 2 from 170,552 carloads to 199,582 carloads in the week ending March 9. The percentage of full time output lost on account of the car shortage for the last six weeks as shown by the report, has been as follows: January 26, 26.6; February 2, 29.2; February 9, 27.7; February 16, 20.2; February 23, 22.3; March 2, 20.8.

Uniform Classification of Freight

One result of the elimination of competition between railroads is to be a speeding up of the work which has been in progress for years toward a uniform classification of freight. Director General McAdoo has appointed a committee, composed of R. N. Collyer, chairman of the Official Classification Committee, R. C. Fyfe, chairman of the Western Classification Committee, J. E. Crosland, chairman of the Southern Classification Committee, J. E. Williams, chairman of the Uniform Classification Committee, and J. C. Colquitt, classification agent of the Interstate Commerce Commission, to formulate a report as to uniform rules, descriptions and weights, with a view to completing that part of the work. A considerable degree of uniformity as to the rules, descriptions and weights has already been accomplished and as the recommendations of the uniform committee have been made they have been gradually adopted by the regional classification committees. Uniformity of ratings has not been attempted. The committee appointed by the director general has been sitting in continuous session in Chicago for over two weeks. The report is to be submitted to the Interstate Commerce Commission and a public hearing will be had before the final regulations are put into effect.

Real-Life in New York; a Florida View

[From the New York Tribune.]

Carl C. Hutches, of Bradentown, Fla., who came to New York a week ago as a representative of about 100 farmers of Manatee County, Fla., to find out why they were losing money on produce they sent to New York, declared that he has solved the mystery.

"Just malicious destruction," he said. "The freight handlers employed by the Pennsylvania Railroad at Pier 29 have wasted thousands of dollars' worth of celery and cauliflowers from Florida during the week I have been here, and I have seen them do it. They use the longshoremen's hooks to drag down crates of perishable goods, the packages fall to the ground, fall to pieces and are tossed aside, to be trampled under horses' feet." He was asked if he thought the vegetables were destroyed in the attempt to keep food prices up.

"No," he said. "The commission men are glad to get the stuff. It's the laborers at the piers. Either they are incompetent workers or they are simply destroying stuff out of pure malice. Their wages are too low. They get 28 cents an hour, and it is raised to 30 cents if they work twenty-two consecutive days in each month.

"I will say, however, that there is police protection. I saw a policeman chase away a little boy who tried to snatch a cauliflower out of the mud and stuff it in a bag. In a few minutes the cauliflower was trampled down by horses' hoofs and wagon wheels."

Commission and Court News

Interstate Commerce Commission

The St. Louis Chamber of Commerce has filed a complaint with the Interstate Commerce Commission, through Joseph W. Folk, its general counsel, asking for an order requiring the railroads to cease from charging rates on coal to St. Louis higher than the rates to East St. Louis and other cities in the St. Louis industrial district. Mr. Folk recently resigned as chief counsel of the Interstate Commerce Commission to conduct a campaign against the arbitrary of 20 cents a ton on coal crossing the Mississippi river, against which St. Louis has been protesting for many years. The petition charges that the bridge arbitrary constitutes a discrimination against St. Louis which is a severe handicap to its manufacturing interests.

State Commissions

The New York State Public Service Commission, second district, has issued a memorandum, dated March 13, telling of a rear collision of freight trains, recently investigated, which resulted from the negligent acts of seven different employees. One employee was killed in the collision and two were injured. The date and location of this interesting collision are not given, nor is there any explanation of what was done or omitted by the different persons charged with responsibility; but the commission in its memorandum makes a special appeal "to all men engaged in operating trains to acquaint themselves thoroughly with operating rules, to observe them rigorously and to be vigilant and careful in the performance of their duties."

Court News

Setting Fires by Locomotives—Sufficiency of Evidence

Evidence for the plaintiff was circumstantial that an engine of the railroad company set the fire which damaged plaintiff's property. The evidence for the railroad was positive and uncontradicted that the engines alleged to have set the fire were equipped with proper spark arresters and were not emitting and did not emit sparks. The Georgia Court of Appeals holds that a verdict for the plaintiff was unauthorized by this evidence.—Savannah & N. W. v. Guann (Ga.), 94 S. E., 914. Decided January 29, 1918.

Elimination of Grade Crossings—Apportionment of Expenditures

The New York Appellate Division holds that the Long Island was entitled to an apportionment of all expenditures necessarily incurred by it in the elimination of a crossing pursuant to order of the Public Service Commission, although such expenditures were in part for moving structures of other companies, who could have been compelled by the commission to move them; the Long Island having no power to compel these companies to act.—People ex rel. Long Island v. Commission, 168 N. Y. Supp., 832. Decided February 1, 1918.

Power-Brake Law

The Safety Appliance Act, of March 2, 1903, §2, as amended, requires air brakes to be in operation on 85 per cent of the cars in each train, and more, if more cars properly equipped are "associated with" the 85 per cent. The Circuit Court of Appeals, Fourth Circuit, holds that if the required 85 per cent of the cars were operated, it was not a violation of the act to haul other cars in such train, which although power-braked, had their air brakes cut out, because defective and not in condition for use.—United States v. Chesapeake & Ohio, 247 Fed. 49. Decided October 8, 1917.

Implied Powers in Sales of Land

In an action against a railroad for commissions on the sale of land in which it was interested, but which it did not own, the Circuit Court of Appeals, Eighth Circuit, holds that it is within the implied powers of a railroad company, whose line runs through a territory largely unsettled as an aid to its own business, to encourage settlement of lands tributory to its road, and to that end it may make a valid contract to pay a reasonable commission on sales of such lands to settlers, although it does not own the lands.—Thrailkill v. Crosbyton-Southplains, 246 Fed. 687. Decided October 15, 1917. Rehearing denied, January 16, 1918.

Automatic Car Coupler Law

The Circuit Court of Appeals, Fourth Circuit, holds that it is a compliance with the coupler section of the Safety Appliance Act, 1893, for a railroad to provide appliances that would automatically couple by impact when the knuckles were open and provided with levers extending outside of the car by means of which the knuckles could be opened, so that a coupling could be made or cars uncoupled. Where a brakeman went between cars to open the knuckle of a coupling, although the lever was in good condition, there could be no recovery on the theory that the railroad should have provided automatic couplers the knuckles of which would at all times be open and ready for coupling.—Chesapeake & Ohio v. Charlton, 247 Fed. 34. Decided November 9, 1917.

Classification of Freight

The Alabama Supreme Court holds, by a divided court, that a tank wagon necessary to use with a traction engine and shipped with the engine, both set up, should be shipped under the same classification as the engine; and it is immaterial that it was not actually attached to the engine during its course of shipment, nor that each could be used without the other, or that there was a tank on the engine itself of a limited capacity. The ground of the dissenting opinion was that the engine was complete in itself and could be used without such a appendage, however convenient and desirable the latter might be for some of the uses to which the engine might be put; therefore, the tank wagon was complete in itself, and could be used, and was designed to be used, separate and apart from the engine. L. & N. v. Newell (Ala.), 77 So., 553. Decided June 7, 1917. Rehearing denied December 24, 1917.

Excess Charge from Passengers Without Tickets

The Mississippi Railroad Commission in 1907 prohibited all railroads from charging passengers who boarded trains without tickets a fare in excess of 3 cents a mile. In 1915 the Illinois Central and the Yazoo & Mississippi Valley adopted a rule requiring each passenger who had an opportunity to buy a ticket to pay 10 cents in excess of the regular fare of 3 cents a mile. The commission declined to approve the extra charge of 10 cents, and entered an order directing that if the charge was made after a given date the railroads would be fined $500 for each offense. The railroads sought to enjoin the imposition and enforcement of such fines. The Mississippi Supreme Court holds that railroads may require a higher rate from passengers not having secured tickets, but cannot collect in excess of the fixed maximum rate of 3 cents a mile.—Illinois Central v. Commission (Miss.), 77 So., 314. Decided January 21, 1918.

Absence of Showing of Railroad's Negligence

The body of a brakeman was found beside the track so that his death might have been caused by his falling from his moving freight train and crushing his head on the frozen ground as well as by coming in contact with a car on a side track while standing in the stirrup of a car of his own train to look for a hot box. In an action against the railroad for his death there was evidence that when the body was discovered the car on the side track was covered by frost which could not be touched without leaving marks, and yet gave no indication that the deceased had come in contact with it. The Utah Supreme Court held that judgment for the plaintiff could not stand, since, where the proximate cause of the injury is left to conjecture, the plaintiff must fail as a matter of law. Although it were assumed that the deceased came in contact with the standing car, yet that would not necessarily exablish the proximate cause of his death. Suppose he had come in contact with the car after he had lost his hold on the freight car on which he was riding, the proximate cause then would be the loosening of his handhold and falling from the moving car. Regarding the evidence from any point of view, therefore, the result would be the same, namely, that the cause of death was left wholly to conjecture.—Tremelling v. Southern Pacific (Utah), 170 Pac., 80. Decided December 4, 1917.

Effect of Interference of Plaintiff's Agent in Loading of Live Stock

In an action for damages to a shipment of calves, alleged to have been caused by the negligence of the railroad, the defense was that the plaintiff, through his agent, undertook to load and did load the calves; that over its protest the car was overloaded; and that this and rough handling by the plaintiff's agent caused the damage. The Texas Court of Civil Appeals held that it was the duty of the railroad to load the cattle, but if the plaintiff, by his agent, undertook to so load them, and as a result of his negligence in overloading or rough handling the animals were injured, the defendant was not liable. On the other hand, if the plaintiff's agent merely assisted the trainmen in the loading, under the control of the conductor, and the car was negligently overloaded, then the railroad was liable for the resulting damage. In any event, the railroad would not be liable for any injuries sustained by rough handling of the cattle by the plaintiff's agent while loading. There was no evidence that the conductor authorized any such conduct by him. Judgment for the railroad was reversed and a new trial ordered on account of the improper admission of evidence.—Massey v. Texas & Pacific (Tex.), 200 S. W., 409. Decided January 17, 1918.

Warning Trespassers

A woman left a highway to walk around a freight train on a side track blocking the crossing. There was another freight on the side track, its engine facing that of the first train. Observing that there was a space of about 20 feet between the two engines, the woman walked between them over the side track and on to the main track, and in thus attempting to cross the main track was struck and killed by a passing passenger train. In an action for her death the petition alleged that her death was caused by the negligence of the railroad's servants in charge of the freight trains, in failing to warn her of the danger of going on the main track immediately before she was struck by the passenger train, and that the danger was not known to her, but was known to them. The Kentucky Court of Appeals held that to recover for such negligence of the freight train crews it would be necessary to allege that they saw her peril in time to warn her, and that she could not, by the exercise of ordinary care, have known of its approach; the trainmen owing no duty to warn a trespasser, and having the right to believe that she had ordinary intelligence and would not walk in front of the passenger train or place herself in a perilous position. There was no complaint that the passenger train did not give the usual signals for the crossing in approaching it, or that its rate of speed was unusual. A demurrer to the petition was held properly sustained.—Sweat's Admr. v. L. & N. (Ky.), 200 S. W., 14. Decided January 25, 1918.

Effect of Federal Employers' Liability Act on Contract Requiring Notice of Injuries

It is definitely settled by the decisions of the Supreme Court of the United States that it was the intention of Congress, by its legislation on the liability of railroads, for injury to employees while engaged in interstate commerce, to take entire and exclusive control over this subject, with a view to making the liability in such cases uniform throughout the United States (N. Y. C. v. Winfield, 244 U. S., 147). And, as in the case of liability of the initial carrier in interestate shipments, this liability is to be determined by the provisions of the legislation itself and the general common law, as administered by the Federal courts, unaffected by State legislation and decisions of

State courts, except as they may announce the common law. The Texas Court of Civil Appeals holds that, under sections 1 and 5 of the Federal Employers' Liability Act, the written contract of employment between a railroad and an employee, in so far as it provided that the road should not be liable for injuries unless the employee gave notice in writing of his claim, was void. The court held that, in the absence of legislative prohibition, such a contract would be valid at common law.—Panhandle & Santa Fé v. Brooks (Tex.), 199 S. W., 665. Decided December 5, 1917. Rehearing denied December 19, 1917.

Boarding Moving Train

In an action by a passenger for injuries received while attempting to board a moving train with a child in his arms, when his foot slipped through a defective step, the Indiana Appellate Court held that the questions of the railroad's negligence and the plaintiff's contributory negligence were for the jury. It was prejudicial error to charge the jury that "the defendant owed to the plaintiff the duty of exercising the highest degree of care for the plaintiff's safety, and to permit the plaintiff to enter upon the defendant's train in safety." This instruction makes the standard of care due to a person merely on the station platform about to take passage on a train the same as that due one already on the train. Under it the railroad was, in effect, required not only to stop the train a reasonable length of time to allow passengers to get on, but it was also required to see and know that no one was attempting or intending to get on the train before starting it. The law recognizes a distinction between the care due to a passenger on the train and that due to one who is merely on the platform waiting to get on. To the former the railroad company owes the highest degree of care, while to the latter it owes ordinary care not to injure him. Judgment for the plaintiff was reversed and a new trial ordered.—Pittsburgh, C., C. & St. L. v. Friend (Ind.), 118 N. E., 598. Decided February 8, 1918.

Injury to Trackman Cutting Rails

A trackman, while cutting a rail with a sledge hammer and cold chisel, was injured by a piece of steel which was chipped off and driven into his eye. A rule of the company required that goggles, provided for that purpose, should be worn when cutting rails, and goggles were in the toolhouse when the accident occurred. A short time before the accident, while cutting other rails, a piece of steel chipped off and struck this man on the wrist. On the day of the accident he told his foreman that he wanted something to protect his eyes, and the foreman replied, "Go on, that is all right; we never use them." Fearing to lose his job, he did as he was directed. In an action for his injuries the Circuit Court of Appeals, Eighth Circuit, holds that the plaintiff could not recover, for three reasons: (1) Because there was undisputed evidence that the company by adopting the rule and by providing the goggles had exercised reasonable care to discharge its duty; (2) as the work of cutting the rails was merely operation, the foreman was the plaintiff's fellow servant, for whose negligence the railroad was not liable; and (3) as the danger was obvious to the plaintiff, having been brought to his attention by the previous chip of steel which struck him in the wrist, he assumed the risk, and the company was not liable, though the foreman be treated as a vice principal.—Union Pacific v. Marone, 246 Fed., 916. Decided October 26, 1917.

Redemption of Unused Tickets

In an action to recover the value of a ticket and a penalty of $100 under Iowa Code, Sec. 2,128c., for failure to redeem unused tickets, it appeared that the plaintiff bought a ticket over the Chicago & N. W. from Ottawa to Turin, but because of the lateness of the train abandoned his proposed passage and got there some other way. Five days later he presented his ticket to the agent from whom he had bought it and demanded the return of the fare, 14 cents. His demand not having been complied with within 10 days he brought action. The principal question was whether the company's rules were reasonable. The statute requires railroads to redeem unused tickets within 10 days from date of sale at the place of purchase and six months from date of sale at the general passenger agent's office. It requires the "provision and privilege of redemption" to be conspicuously posted at each office. The defendant company's rules, properly posted, called for written notice, "stating reason why ticket was not wholly used and certifying that passage was not received for any portion stated to be unused." Blank forms were furnished to the ticket agent for use by claimants. The Iowa Supreme Court holds that these rules are a reasonable compliance with the requirements of the statute. "It would be an idle ceremony to require the railway to post conspicuous notices for the information of ticket holders if the rules thus published had no influence upon the course to be followed by them in demanding redemption. . . . The agent proposed to take the ticket and send it to the general passenger agent for redemption. The plaintiff refused to permit this to be done because the ticket constituted his evidence. The plaintiff had not, in fact, observed the posted notice, and did not, in fact, know of the regulations of the company. This fact would have its importance as bearing upon the good faith of the plaintiff, which is unquestioned in this case, but it cannot be made effective to penalize the defendant. The plaintiff was necessarily charged with notice of the regulations. While such rule of constructive notice might operate harshly in some cases where a ticket holder was ignorant and unable to read, such harshness is absent as to the plaintiff, who is one of the foremost lawyers in his county." It was therefore held the plaintiff's suit was premature, as his demand should have conformed to the company's regulations; and judgment for the plaintiff was reversed.—Prichard v. Chicago & N. W. (Iowa), 166 N. W., 299. Decided February 9, 1918.

Loss by Act of God; Unprecedented Flood

The New York Court of Appeals, reversing the judgment of the Appellate Division (167 A. D., 738, 153 N. Y. Supp., 374), has decided in favor of the railroad in an action for the loss of goods destroyed in the New York Central freight yard at Troy in the flood of March 26, 1913, by fire from a car of unslaked lime. The court holds that the Carmack Amendment, making the railroad liable to the shipper of interstate freight for loss caused by it and prohibiting relief by contract from such liability, does not change the common law rule as to the effect of the act of God in excusing the railroad from loss resulting approximately therefrom. The court says: "In both the state and the United States courts where proof is given that goods are damaged in the hands of the carrier, the burden is upon him to show that the damage arose from some cause for which he was not liable. They differ, however, in this: In the United States courts where the carrier shows that the loss was occasioned by the act of God, he has done all that is required. If the shipper then claims that the carrier's negligence also directly contributed to the injury, he must show that fact. In New York, on the other hand, the burden is upon the carrier to show both the act of God and his own freedom from contributing negligence. Michels v. N. Y. C., 30 N. Y., 564, 86 Am. Dec., 415; Read v. Spaulding, 30 N. Y., 630, 86 Am., Dec., 426. That is the only distinction. Both jurisdictions hold that to relieve the carrier the act of God must be the immediate, direct and efficient cause of the loss. Neither excuses him if his own negligence also directly and proximately contributes to the result. They may have differed as to when negligence did so directly contribute, as in the case of delays. Not as to the rule, only as to its application. Condict v. Grand Trunk, 54 N. Y., 500; Cormack v. N. Y., N. H. & H., 196 N. Y., 442, 90 N. E., 56, 24 L. R. A. (U. S.), 1,209, 17 Ann. Cas., 949; St. Louis I. M. & S. v. Com. Un. Ins. Co., 139 U. S., 223, 11 Sup. Ct., 554, 35 L. Ed., 154; R. R. Co. v. Reeves, 10 Wall., 176, 19 L. Ed., 909. As to the question of proximate cause, when we have to do with interstate shipments we must follow the United States courts." The court finds that the carrier's negligence did not directly contribute to the loss. "We must hold that any alleged delay on the part of the defendant, or any action on its part in placing the car near the car of lime, even were there evidence of negligence with regard to such delay, or with regard to placing the car, was not the proximate cause of the loss. Nor is there any evidence that the defendant knew or should have known that the car was in danger at the time it placed it in the yard, or in time to have permitted its removal. The flood was unprecedented, as has been said, and no such warning was given, so far as appears, and no such physical conditions existed, as to allow a jury to impute this knowledge."—Barnet v. N. Y. C. & H. R. (N. Y.), 118 N. E., 625. Decided January 8, 1918.

Equipment and Supplies

Locomotives

THE CANADIAN GOVERNMENT RAILWAYS are expected to place orders shortly for 150 locomotives, 100 to the Montreal Locomotive Works, and 50 to the Canadian Locomotive Company.

UNITED STATES GOVERNMENT LOCOMOTIVES.—The Central Advisory Purchasing Committee of the Railroad Administration will hold a meeting in Washington next Monday with the manufacturers of locomotive specialties to consider the specialties to be used on the government's standard locomotives.

Freight Cars

J. R. WALSH, Savannah, Ga., is inquiring for 5 to 10 8,000-gal. capacity tank cars.

THE NEW JERSEY ZINC COMPANY, New York, is inquiring for 4 Goodwin Class C dump cars.

THE ROXANA PETROLEUM COMPANY, Tulsa, Okla., is inquiring for 100 10,000-gal. capacity tank cars.

THE CHICAGO, MILWAUKEE & ST. PAUL has been authorized by the Railroad Administration to build 5,000 freight cars in its own shops.

THE CANADIAN GOVERNMENT has placed orders for 8,150 freight cars as follows: Canadian Car & Foundry Company, 5.000 40-ton steel frame box cars, 450 40-ton, wooden ballast cars and 300 30-ton stock cars. Eastern Car Company, 750 40-ton steel frame flat cars and 650 50-ton coal cars; National Steel Car Company, 1,000 40-ton steel frame box cars. Other cars, including refrigerator, tank and passenger cars, are also expected.

UNITED STATES GOVERNMENT.—The United States Railroad Administration on Monday asked car builders to submit prices by Wednesday, March 27, on 100,000 cars to be built to standard specifications which were given to builders at a conference that day. Probably 50,000 more cars will be ordered in the next six months.

It is understood that the 100,000 cars to be ordered at this time will include 50,000 box, 25,000 gondola and 25,000 hopper cars.

The specifications and plans issued by the director general on Monday cover eight types of cars, as follows:

40-ton steel underframe, double sheathed box car.
40-ton steel underframe, single sheathed box car.
50-ton steel underframe, single sheathed box car.
50-ton steel high side gondola with 8 drop doors.
50-ton composite high side gondola with 8 drop doors.
70-ton steel low side gondola car with drop ends.
55-ton hopper car.
70-ton hopper car.

These specifications are particularly broad and those parts which are possible of interchange have been made common to all of the cars. An item under "material options" in all of the specifications, to the effect that the specialties to be used will be as covered in the contract, indicates that the government intends to maintain a liberal policy in this respect.

Further details concerning the design and specifications will be found elsewhere in this issue.

The car builders met with the purchasing committee on Monday regarding the 100,000 car purchase, and it is reported that the committee will meet with the car specialty men to consider the specialties to be used on these cars in the latter part of the week.

Signaling

THE LEHIGH VALLEY has ordered from the General Railway Signal Company, an interlocking machine, to be installed at Easton, Pa.; 38 working levers, style A.

Supply Trade News

This week's Railway Age contains articles of special interest to railway supplymen as follows:

Organizing the Supply Industry—an editorial, page 775.
Specifications for the United States Standard Cars, page 785.
China's Greatest Need Today Is Transportation, page 797.

Next week's issue will be a Special Quarterly Issue and will contain several articles that railway men will ill afford to miss. There will be articles on the railway supply industry's part in the recent developments of the day, a number of articles on export trade in railway supplies—a matter which is receiving increasing attention on the part of progressive railway supply manufacturers—as well as many other articles on the general railway problems that are proving of prime importance at the present moment.

Warren R. Roberts, president of the Roberts & Scheafer Company, who has been a major in the emergency construction division of the Quartermaster Reserve Corps at Washington, has been promoted to lieutenant-colonel.

Richard Ward Baker, superintendent of outside construction, of the Watson-Stillman Co., New York, died March 24, at his home at Roselle, N. J., at the age of 68 years. He spent his entire business life in the services of the Watson-Stillman Co., having entered its employ at the age of 14, finally becoming superintendent, which post he held for many years. Upon the completion of 50 years' service in 1914, the Board of Directors of the Watson-Stillman Co. celebrated the event by the presentation of a substantial check and an engrossed copy of the resolution setting forth the company's appreciation.

Pettibone-Mulliken Company

The Pettibone-Mulliken Company, Chicago, reports net earnings of $1,682,354 for 1917, as compared with $617,751 in 1916. The surplus, after all charges and deferred dividends, amounted to $628,458, as compared to $178,724 available for dividends on the common stock in the previous year. The income accounts for the two years follow:

	1917.	1916.
Manufacturing profits, less maintenance, taxes, selling and administration expenses	$1,669,202	$606,152
Interest, dividends, etc., received	13,151	11,599
Net income	1,682,354	617,751
Surplus carried forward	398,059	225,335
Total	2,080,413	843,086
First preferred dividend, 7 per cent	112,072	122,500
Second preferred dividend, 7 per cent	50,890	52,500
Depreciation of plant	100,709	95,027
First preferred stock sinking fund	350,225	175,000
Excess profits and income tax	440,000	.....
Surplus	1,026,517	398,059

Trade Publications

STONE-FRANKLIN LIGHTING EQUIPMENT is the title of an instruction book and part catalogue just issued by the Franklin Railway Supply Company, Inc., 30 Church street, New York. The first part of the book contains illustrations and wiring diagrams of the different types of Stone-Franklin car lighting equipment. Following this there are given information pertaining to terminal inspection, some condensed maintenance information, instructions for the application of generators and detailed statements of the principal features to be observed in operating and maintaining the equipment. The latter part of the book is given over to a complete list of parts. Cross-section drawings of the generators show exactly where these parts are located. The book contains many illustrations and will be found to be of much value to all users of Stone-Franklin lighting equipment.

THE UNITED STATES NAVY in the year ending June 30, 1916. used 47,000,000 gallons of oil fuel.

Railway Construction

ALABAMA INTERURBAN.—A contract has been given to A. T. Newell & Brothers, Birmingham, Ala., to build this line. The plans call for building a double track main line between lock 17 on the Warrior river and Birmingham, Ala., also numerous spurs to reach ore, coal and timber lands.—T. L. Cannon, managing director, Birmingham (March 1, p. 480).

HAVRE DE GRACE & TANEYTOWN ELECTRIC RAILWAY.—Incorporation has been granted to this company to build an electric line from Havre de Grace, Md., on the Baltimore & Ohio and the Pennsylvania Railroad, west via Towson to Finksburg, thence northwest via Westminster to Taneytown, on the Pennsylvania Railroad, about 70 miles. C. Stanley Stirling, president, 423 Calvert building, Baltimore.

MORGANTOWN & WHEELING.—This company is planning to carry out improvements during 1918 to reduce the grades to a maximum of 1.2 per cent and the curvature to a maximum of 16 degrees. The work will also include relocating the main track between Randell and Cassville, and building one steel bridge 100 ft. long and another 70 ft. long.

NASHVILLE, CHATTANOOGA & ST. LOUIS.—This company recently completed a line from Hermitage, Tenn., to Hadley's Bend, 7.1 miles in 28 days. The new line will serve a $60,000,000 powder plant of the government. The work involved 67,000 cu. yd. of embankment and 8,000 cu. yd. of excavation, as well as the construction of two large trestles, one over 1,000 ft. and the other 800 ft. long. The first day's work was done with two grading gangs numbering 50 men each. Because of the pressing need of the speedy completion of the line, the forces were rapidly increased until the number of men employed on work totaled 3,300.

TAMIAMI RAILWAY.—Construction work is to be started at once on this projected line, from Miami, Fla., west to Chevelier about 65 miles, thence northwest to Fort Myers, an additional 75 miles. There will be one steel bridge over the Miami river. The promoters expect to develop a traffic in lumber, farm products and sea food. J. F. Jaudon, president; F. K. Ashworth, chief engineer, Miami.

SOUTH MANCHURIA ROLLING STOCK.—The South Manchuria Railway Company has planned to construct eight hundred freight cars and three hundred locomotives as a piece of continuation work extending over the fiscal years of 1918 and 1919. This rolling stock construction program has been further supplemented by the intended construction of three hundred freight cars and one hundred locomotives for the exclusive purpose of transporting coal and materials for the Anshan Steel Works.—*The Far Eastern Review.*

NEW RAILWAYS FOR JAPAN.—The Japanese Railway Council at an extraordinary meeting January 18, adopted in toto Baron Goto's project for the construction of 589 miles of cross-country railways in Japan to link the present trunk lines. The Council voted a special appropriation of nearly $46,000,000, which, added to $62,500,000 previously appropriated, releases $108,500,000 during the next ten years for the construction of these new lines. In addition to the $121,000,000, which the present railway lines have standing to their credit in the form of appropriations already made for expenditure in improvements, the Council voted a special appropriation of $9,000,000, totaling $130,000,000 for improvements. Of this $9,000,000, somewhat over half is to provide for the rising cost of rolling stock, and $4,300,000 is to be expended in the widening of tunnels and in the widening of the space on the roadbed between the double tracks. This is done so that in the future, no physical obstacles will stand in the way of the installation of a broader gage. The Council's action, combined with previous appropriation yet unspent, provides that an expenditure of $238,789,357 for building new railways and improving the present ones within the next ten years has been assured.—*The Far Eastern Review.*

Railway Financial News

CHESAPEAKE & OHIO.—The directors of this company, at their meeting on March 21, voted to appropriate out of the net earnings for the twenty months ended December 31, 1917, $7,500,000 for property expenditures under the agreement made with Kuhn, Loeb & Co. and the National City Company in the spring of 1916 for the purchase of $40,180,000 of the railroad's thirty-year 5 per cent convertible bonds. By this action the company anticipated its requirements for expenditures on additions and betterments by more than a year, as the agreement with the bankers stipulated that the road had until June 1, 1919, in which to spend the full $7,500,000. In all the Chesapeake & Ohio agreed to spend $15,500,000 to meet the requirements of the bankers before they would consent to underwrite the convertible bonds. The larger part of this issue was set aside to pay off $33,000,000 five-year 5 per cent notes that mature on June 1 next year. Frank A. Trumbull, chairman of the board of directors, announced after the meeting that the surplus for the twenty months ended December 31, after the reserve for betterments had been set aside, amounted to $1,768,500. "Thus we have done in twenty months," he said, "what we were allowed to do in three years."

CINCINNATI, FINDLAY & FORT WAYNE.—This road, which had been ordered discontinued by the district court at Cincinnati, will be kept running by the government, having been included among the government controlled roads.

GEORGIA & FLORIDA.—J. F. Lewis, president of the Citizens Bank of Valdosta, Ga., and his brother, E. S. Lewis, of Montezuma, Ga., have bought the interests of the Baltimore Trust Co. in the Georgia & Florida Railroad.

GULF, MOBILE & NORTHERN.—At the annual meeting of the stockholders of the company the following directors were elected for the ensuing year: John W. Platton, Charles K. Beekman, William H. Cloverdale, Joseph S. Dale, C. H. Murphy, New York; W. F. Owen, J. C. Rich, Mobile, Ala.; A. H. S. Post, T. Nelson Strother, Baltimore, Md.; I. B. Tigrett, Jackson, Tenn.; and Frederick W. Scott, Richmond, Va.

OREGON SHORT LINE.—W. A. Harriman, vice-president of the Union Pacific System, has been made a member of the executive committee and also elected a director of the Oregon Short Line, succeeding R. S. Lovett, resigned.

OREGON-WASHINGTON RAILROAD & NAVIGATION COMPANY.—C. A. Peabody, vice-president of the Delaware & Hudson, has been elected a director of the Oregon-Washington Railroad & Navigation Company, succeeding R. S. Lovett, resigned.

GOVERNMENT CONTROL OF COPPER IN SWEDEN.—By a decree dated January 18, effective the same day, the Swedish Government takes control of all trade in copper and copper scrap, including copper unmanufactured or in the rough, electrolytic copper, as well as all scrap or waste containing copper, such as copper scrap, brass scrap, nickel (white metal) scrap, britannia (yellow metal) scrap, and all other scrap in which copper forms a part.—*Commerce Reports.*

LONDON FOG CAUSES RAILWAY ACCIDENTS.—The densest fog for over 30 years occurred in the southwestern districts of London on the evening of Thursday, January 31. Road traffic was practically stopped, and railway transport completely disorganized. Many railway passengers fell off the platform, and three were killed from this cause on the Metropolitan District Railway.—*The Engineer, London.*

PROJECTED STEEL WORKS FOR NORWAY.—The village of Risor, Norway, which is between Christiansand and Christiania, is projecting steel works and roller mills to turn out 30,000 to 40,000 tons per year. It will utilize as far as possible electric power and electric heat for smelting. This will be derived from the Hoge Falls, the first transmission project being 22,000 horsepower.—*Commercial Reports.*

ANNUAL REPORT

CANADIAN PACIFIC RAILWAY COMPANY—THIRTY-SEVENTH ANNUAL REPORT

To the Shareholders:

The accounts of the Company for the year ended December 31st, 1917, show the following results:—

Gross Earnings		$152,389,334.95
Working Expenses		105,843,316.50
Net Earnings		$46,546,018.45
Deduct Fixed Charges		10,229,143.43
Surplus		$36,316,875.02
Contribution to Pension Fund		500,000 00
		$35,816,875.02
Deduct Net Earnings of Pacific Coast Steamships, Commercial Telegraph, and News Department, transferred to Special Income Account		1,968,682.56
		$33,848,192.46
From this there has been charged a half-yearly dividend on Preference Stock of 2 per cent., paid October 1st, 1917	$1,613,638.42	
And three quarterly dividends on Ordinary Stock of 1¾ per cent. each, paid June 30th, 1917, October 1st, 1917, and December 31st, 1917	13,650,000.00	15,263,638.42
		$18,584,554.04
From this there has been declared a second half-yearly dividend on Preference Stock, payable April 1st, 1918	$1,613,638.42	
And a fourth quarterly dividend on Ordinary Stock of 1¾ per cent., payable April 1st, 1918	4,550,000.00	6,163,638.42
Leaving net surplus for the year		$12,420,915.62

In addition to the above dividends on Ordinary Stock, three per cent. was paid from Special Income

SPECIAL INCOME FOR YEAR ENDED DECEMBER 31st, 1917

Balance at December 31st, 1916	$12,872,451.54	
Less: Dividend paid March 31st, 1917	1,950,000.00	$10,922,451.54
Net Revenue from Investments and Available Resources, Exhibit "C"		2,010,911.76
Interest on Deposits, and Interest and Dividends on Other Securities		2,697,087.20
Net Earnings Ocean and Coastal Steamship Lines		3,724,720.27
Net Earnings Commercial Telegraph and News Department, Rentals and Miscellaneous		2,280,580.09
		$21,635,750.86
Less: Payments to Shareholders in dividends; June 30th, 1917, October 1st, 1917, and December 31st, 1917		5,850,000.00
		$15,785,750.86

From this a dividend has been declared payable April 1st, 1918 $1,950,000.00

2. The working expenses for the year amounted to 69.46 per cent. of the gross earnings, and the net earnings to 30.54 per cent., as compared with 63.88 and 36.12 per cent, respectively, in 1916.

3. The sales of agricultural land in the year were 789,055 acres for $14,330,811, being an average of $18.16 per acre. Included in this area were 58,681 acres of irrigated land which brought $45.99 per acre, so that the average price of the balance was $15.92 per acre.

4. Before the adoption in 1913 of the policy of selling lands to settlers only, considerable areas had been bought by Land Companies and others for speculative purposes. Nearly all of these purchasers were in default and nothing was being done with the lands. To remedy this your Directors negotiated the cancellation of the contracts and the restoration of the lands to the Company. Some of these have already been resold to settlers, and through the Company's agency purchasers will be found for the balance at prices somewhat better than those specified in the cancelled contracts. The cancellations have been adjusted in the accounts submitted.

5. Besides the substantial amount already invested in the securities of, and loans to. Great Britain, Canada and the Allies, your Company subscribed to $10,000,000 of the recent Canadian Victory Loan. A sufficient amount has been set aside to meet the instalments of the allotment payable in the current fiscal year.

6. The arrangement for the creation by the Company of Collateral Trust Bonds to be loaned to His Majesty's Imperial Treasury was abandoned for the reasons given at the last Annual Meeting of the Shareholders. As stated by the President in his address to the Shareholders the Company did, however, with due authority, issue and deposit by way of loan with the nominees of the Imperial Treasury, $40,000,000 currency 4% Consolidated Debenture Stock. The period of the loan is 5 years from January 1st, 1917, but the Lords of the Treasury reserved the right to return the Stock to the Company at any time after January 1st, 1919, on giving three months' notice, or to purchase the Stock in whole or in part at 80% of its face value in New York funds or their equivalent. The annual premium of ½% resulting from this transaction was not taken into the revenue of the year, but was written off against the face value of the security. Apart from this the Capital Account remains unchanged, all capital expenditures during the year having been met from surplus revenue.

7. The gross earnings of your transportation system in the fiscal year 1917 exceeded those of the previous year by $13,000,000, but the net earnings were less by $4,000,000. This large addition of $17,000,000 to the working expenses may be attributed almost entirely to the advance in wages and in the cost of fuel and materials of every description.

8. Subject to your approval, your Directors have authorized expenditures on Capital Account during the present year of $3,200,000, apportioned to the following works, viz.:—Replacement of temporary structures on branch lines by permanent work, $512,000; transfer slip at Vancouver, additional coaling plants, small stations and section houses, $815,000; interlocking and protective signal apparatus, $160,000; additional terminal and side track accommodation, $450,000; and a variety of additions and improvements to the property designed to secure greater convenience and economy, $1,263,000.

9. The undermentioned Directors will retire from office at the approaching Annual Meeting. They are eligible for re-election.

MR. J. K. L. ROSS,
RT. HON. LORD SHAUGNESSY, K.C.V.O.,
SIR THOMAS SKINNER, BART.

For the Directors,
SHAUGNESSY,
President and Chairman.

MONTREAL, March 11th, 1918.

CANADIAN PACIFIC RAILWAY COMPANY

General Balance Sheet December 31st, 1917.

ASSETS

PROPERTY INVESTMENT:			
Railway, Rolling Stock Equipment and Lake and River Steamers			$538,510,563.24
OCEAN AND COASTAL STEAMSHIPS, Exhibit "A" (Present estimated value, $65,000,000.00)			26,810,547.40
ACQUIRED SECURITIES (COST):			
Exhibit "B"			123,126,925.85
ADVANCES TO CONTROLLED PROPERTIES AND INSURANCE PREMIUMS			6,747,258.86
INVESTMENTS AND AVAILABLE RESOURCES:			
(Including amount held in trust for 6% Note Certificates, $57,147,628.81)			
Deferred Payments on Lands and Townsites	$55,826,198.53		
Imperial and Dominion Government Securities	33,366,508.97		
Provincial and Municipal Securities	2,031,721.29		
Debenture Stock loaned to Imperial Government	40,000,000.00		
Miscellaneous Investments, Exhibit "C," Cost	25,465,452.98		
Assets in Lands and Properties, Exhibit "D"	112,373,923.59		
Cash	10,586,733.55		279,650,538.91
WORKING ASSETS:			
Material and Supplies on Hand	$17,902,955.51		
Agents' and Conductors' Balances	2,642,246.96		
Net Traffic Balances	335,439.71		
Imperial and Dominion Governments, Accounts due for Transportation, etc	4,344,300.35		
Miscellaneous Accounts Receivable	6,579,312.86		
Cash in Hand	31,424,893.61		63,229,149.00
			$1,038,074,983.26

LIABILITIES.

CAPITAL STOCK:			
Ordinary Stock	$260,000,000.00		
Four Per Cent. Preference Stock	80,681,921.12		$340,681,921.12
FOUR PER CENT. CONSOLIDATED DEBENTURE STOCK			216,284,882.10
MORTGAGE BONDS:			
Algoma Branch 1st Mortgage 5 per cent.			3,650,000.00
NOTE CERTIFICATES 6 PER CENT.			52,000,000.00
PREMIUM ON ORDINARY CAPITAL STOCK SOLD.			45,000,000.00
CURRENT:			
Audited Vouchers	5,381,663.76		
Pay Rolls	5,064,658.54		
Miscellaneous Accounts Payable	8,821,809.18		19,268,131.48
ACCRUED:			
Rentals of Leased Lines and Coupons on Mortgage Bonds			535,025.47
EQUIPMENT OBLIGATIONS			10,030,000.00
RESERVES AND APPROPRIATIONS:			
Equipment Replacement	4,051,021.32		
Steamship Replacement	5,033,170.97		
Reserve Fund for Contingencies and for Contingent War Taxes	22,659,908.73		
Fire and Marine Insurance Fund	1,483,810.30		33,227,911.32
NET PROCEEDS LANDS AND TOWNSITES			76,487,298.28
SURPLUS REVENUE FROM OPERATION			127,275,369.58
SURPLUS IN OTHER ASSETS			113,634,443.91
			$1,038,074,983.26

J. G. OGDEN,
Vice-President.

AUDITORS' CERTIFICATE.

We have examined the Books and Records of the Canadian Pacific Railway Co. for the year ending December 31st, 1917, and having compared the annexed Balance Sheet and Income Account therewith, we certify that, in our opinion, the Balance Sheet is properly drawn up so as to show the true financial position of the Company at that date, and that the relative Income Account for the year is correct.

PRICE, WATERHOUSE & CO.
Chartered Accountants (England).

Montreal, March 8th, 1918.

RECEIPTS AND EXPENDITURES.

YEAR ENDED DECEMBER 31ST, 1917.

Cash in hand, December 31st, 1916		$57,076,018.77
RECEIPTS:		
Surplus Revenue as per statement	$33,848,192.46	
Special Income as per statement	10,713,299.32	
		44,561,491.78
LAND DEPARTMENT:		
Lands and Townsites:		
Proceeds of Sales and Interest	18,944,291.02	
Less Sales Expenses and Irrigation $3,004,605.25		
Cost of Alberta Ry. & Irr. Co. Land 33,011.45		
	3,037,616.70	
	15,906,674.32	
Less contracts of sales made in previous years surrendered and cancelled	8,299,247.79	
	7,607,426.53	
Deferred Payments on previous year's sales.	4,387,657.19	
	11,995,083.72	
Amount remaining in Deferred Payments on the sales of the year after reduction by cancellation as above	5,406,343.32	
		6,588,740.40
Amount applied in reduction of Cost of Mining Properties, Exhibit "D"		267,944.00
ADD:		
Agents' and Conductors' Balances	2,642,246.96	
Net Traffic Balances	335,439.71	
Imperial and Dominion Governments	4,344,300.35	
Miscellaneous Accounts Receivable	6,579,312.86	
Advances to Controlled Properties and Insurance Premiums	6,747,258.86	
	20,648,558.74	
Amount at December 31st, 1916	65,575,485.44	
		44,926,926.70
		$153,421,121.65
EXPENDITURES:		
Dividends on Preference Stock:		
2 per cent. paid March 31st, 1917	$1,613,638.42	
2 per cent. paid October 1st, 1917	1,613,638.42	
		$3,227,276.84
Dividends on Ordinary Stock:		
2½ per cent. paid March 31st, 1917	6,500,000.00	
2½ per cent. paid June 30th, 1917	6,500,000.00	
2½ per cent. paid October 1st, 1917	6,500,000.00	
2½ per cent. paid December 31st, 1917	6,500,000.00	
		26,000,000.00
Construction of branch lines:		
Amount expended in previous years and included in advances on lines under construction, transferred to Cost of Railway.	13,239,338.42	
Expenditure during 1917	330,686.14	
		13,570,024.56
Additions and Improvements, main line and branches, Exhibit 'E"		4,569,814.77
Expenditures on leased and acquired lines, Exhibit "F"		7,505,176.12
Shops and Machinery		69,134.12
Ocean and Coastal Steamships:		
Payments on Steamships acquired and under construction	1,533,769.08	
Expenditures in previous years transferred from Advances on Steamships	5,091,298.06	
		6,625,067.14
Deposited with Trustee, Special Investment Fund		5,896,033.67
SECURITIES ACQUIRED:		
Alberta Ry. and Irrigation Co. Stock	10,080.00	
Alberta Stock Yards Co. Stock	150.00	
Public Markets, Ltd., of Manitoba, Stock	15,000.00	
Spokane International Ry. Stock	94,694.39	
Trustee Securities	6,335,857.58	
		6,455,781.97
Securities of lines constructed in previous years, clearing cash advances:		
Calgary & Edmonton Ry. 1st Mortgage Bonds	1,540,000.00	
Campbellford, Lake Ontario & Western Ry. 1st Mortgage Bonds	2,675,000.00	
Kettle Valley Ry. 1st Mortgage Bonds	13,530,000.00	
Kootenay Central Ry. 1st Mortgage Bonds.	2,370,000.00	
Lake Erie & Northern Ry. 1st Mortgage Bonds	2,265,800.00	
		22,380,800.00
Securities and Properties. Allocation to Investments and Available Resources heretofore carried as Advances		2,317,734.57
Payment of Equipment Obligations		1,100,000.00
Payments on subscriptions to Imperial and Dominion Govt. Loans		18,522,499.60
Increase in Material and Supplies on hand		4,305,559.67
		122,544,903.03
DEDUCT INCREASE IN LIABILITIES:		
Current Liabilities	19,268,131.48	
Interest on Funded Debt	535,025.47	
Reserves and Appropriations	33,227,911.32	
	53,031,068.27	
Amount at December 31st, 1916	52,482,393.28	
		548,674.99
		121,996,228.04
Cash in hand		31,424,893.61
		$153,421,121.65

STATEMENT OF EARNINGS FOR THE YEAR ENDED DECEMBER 31ST, 1917.

From Passengers	$30,238,986.08
" Freight	103,635,794.74
" Mails	1,429,404.61
" Sleeping Cars, Express, Telegraph and Miscellaneous.	17,085,149.52
Total	$152,389,334.95

STATEMENT OF WORKING EXPENSES FOR THE YEAR ENDED DECEMBER 31ST, 1917.

Transportation Expenses	$53,029,260.40
Maintenance of Way and Structures	17,470,069.17
Maintenance of Equipment	23,404,262.77
Traffic Expenses	3,084,944.08
Parlor and Sleeping Car Expenses	1,006,037.67
Expenses of Lake and River Steamers	1,054,683.53
General Expenses	5,023,609.14
Commercial Telegraph	1,770,449.74
Total	$105,843,316.50

STATEMENT OF EQUIPMENT AT 31ST DECEMBER, 1917.

Locomotives	2,255
*First and second class Passenger Cars, Baggage Cars and Colonist Sleeping Cars	2,191
First class Sleeping, Dining and Café Cars	468
Parlor Cars, Official and Paymasters' Cars	122
Freight and Cattle Cars (all kinds)	87,301
Conductors' Vans	1,359
Boarding, Tool and Auxiliary Cars and Steam Shovels	6,735

*Includes Cars in Line Service as follows:

ST. JOHN AND BOSTON LINE

4 First Class
4 Second Class
4 Baggage
} 80.04% owned by other lines.

12 Cars

MONTREAL AND BOSTON LINE

2 First Class
2 First Class & Smoking
2 Dining and Smoking
4 2nd Class
4 Baggage & Express
} 68.33% owned by other lines.

14 Cars

TORONTO, HAMILTON AND BUFFALO LINE

10 First Class
4 Second Class
4 Baggage and Express
1 Baggage and Smoking
} 63.96% owned by other lines.

19 Cars

LAKE AND RIVER STEAMERS

UPPER LAKES

Alberta, Athabasca, Assiniboia, Keewatin, Manitoba

BRITISH COLUMBIA LAKE AND RIVER

Aberdeen	Kuskanook	Rossland
Bonnington	Minto	Sandon
Castlegar	Moyie	Sicamous
Columbia	Nelson	Slocan
Hosmer	Nasookin	Valhalla
Kaleden	Naramata	Whatshan
Kokanee	Okanagan	Ymir
Kootenay	Proctor	York

FERRIES

Michigan, Ontario

DESCRIPTION OF FREIGHT FORWARDED.

		YEARS ENDED DECEMBER 31ST		
		1915	1916	1917
Flour	Barrels	8,940,310	11,119,890	13,727,970
Grain	Bushels	219,388,358	256,106,690	213,340,507
Live Stock	Head	2,524,603	2,172,437	2,190,596
Lumber	Feet	2,376,174,667	3,017,964,134	3,178,554,667
Firewood	Cords	263,384	289,471	295,277
Manufactured Articles	Tons	6,570,535	8,871,928	10,148,568
All other articles	Tons	7,367,927	8,487,785	8,788,423

FREIGHT TRAFFIC.

	YEARS ENDED DECEMBER 31ST		
	1915	1916	1917
Number of tons carried	24,895,106	30,168,798	31,198,685
Number of tons carried one mile	10,602,237,949	14,931,739,090	14,882,991,224
Earnings per ton per mile	0.68 cents	0.65 cents	0.70 cents

PASSENGER TRAFFIC.

	YEARS ENDED DECEMBER 31ST	
	1916	1917
Number of passengers carried	15,577,652	15,576,721
Number of passengers carried one mile	1,367,273,140	1,488,974,821
Earnings per passenger per mile	1.96 cents	2.03 cents

TRAIN TRAFFIC STATISTICS—FOR TWELVE MONTHS ENDED DECEMBER 31ST, 1917 AND 1916.

EARNINGS OF LAKE AND RIVER STEAMERS NOT INCLUDED IN THIS STATEMENT.

	Year ended December 31st, 1917.	Year ended December 31st, 1916.	Increase or Decrease. Amount or number.	Per Cent.
TRAIN MILEAGE.				
Passenger trains	18,093,554	18,669,463	*575,909*	*3.08*
Freight "	25,182,863	26,162,580	*979,717*	*3.74*
Mixed "	2,056,414	2,105,496	*49,082*	*2.33*
Total trains	45,332,831	46,937,539	*1,604,708*	*3.42*
CAR MILEAGE.				
PASSENGER.				
Coaches and P. D. and S. cars	93,745,444	92,280,927	1,464,517	1.59
Combination cars	2,769,677	2,841,521	*71,844*	*2.53*
Baggage, Mail and Express cars	45,327,370	40,816,347	2,511,023	6.15
Total Passenger cars	139,842,491	135,938,795	3,903,696	2.87
FREIGHT.				
Loaded	617,479,662	642,075,295	*24,595,633*	*3.83*
Empty	245,513,721	280,078,704	*34,564,983*	*12.34*
Caboose	28,211,955	28,799,621	*587,666*	*2.04*
Total Freight cars	891,205,338	950,953,620	*59,748,282*	*6.28*
Passenger cars per Traffic Train Mile	6.94	6.54	.40	6.12
Freight cars per Traffic Train Mile	32.72	33.64	*.92*	*2.73*
PASSENGER TRAFFIC.				
Passengers carried (earning revenue)	15,462,276	15,468,449	*6,173*	*.04*
Passengers carried (earning revenue) one mile	1,480,023,872	1,358,587,541	121,436,331	8.94
Passengers carried (earning revenue) one mile per mile of road	113,932	104,866	9,066	8.65
Average journey per passenger ....miles	95.72	87.83	7.89	8.98
Average amount received per passenger ....$	1.93	1.72	.21	12.21
Average amount received per passenger mile...cts.	2.02	1.95	.07	3.59
Average number of passengers per train mile	73.45	65.40	8.05	12.31
Average number of passengers per car mile	15.33	14.28	1.05	7.35
Revenue from passengers per passenger car mile...cts.	30.98	27.89	3.09	11.08
Total passenger train earnings per train mile....$	1.92	1.63	.29	17.79
Total passenger train earnings per mile of road..$	2,973.92	2,617.25	356.67	13.63

FREIGHT TRAFFIC.

Tons of revenue freight carried one mile	14,677,957,266	14,683,022,064	*5,064,798*	*.03*
Tons non-rev. freight carried one mile	1,496,188,006	1,510,474,643	*14,286,637*	*.95*
Total tons (all classes) freight carried one mile	16,174,145,272	16,193,496,707	*19,351,435*	*.12*
Tons of revenue freight carried one mile per mile of road	1,129,908	1,133,343	*3,435*	*.30*
Tons of non-rev. freight carried one mile per mile of road	115,176	116,589	*1,413*	*1.21*
Total tons (all classes) freight carried one mile per mile of road	1,245,084	1,249,932	*4,848*	*.39*
Average amount received per ton per mile of revenue freight .....cts.	0.698	0.648	0.050	7.72
Average No. of tons of revenue freight per train mile	538.85	519.42	19.43	3.74
Average No. of tons of non-rev. freight per train mile	54.93	53.43	1.50	2.81
Average No. of tons of (all classes) freight per train mile	593.78	572.85	20.93	3.65
Average No. of tons of revenue freight per loaded car mile	23.77	22.87	.90	3.94
Average No. of tons of non-rev. freight per loaded car mile	2.42	2.35	.07	2.98
Average No. of tons of (all classes) freight per loaded car mile	26.19	25.22	.97	3.85
Freight train earnings per loaded car mile.....cts.	16.59	14.83	1.76	11.87
Freight train earnings per train mile .....$	3.76	3.37	.39	11.57
Freight train earnings per mile of road.....$	7,885.40	7,349.25	536.15	7.30

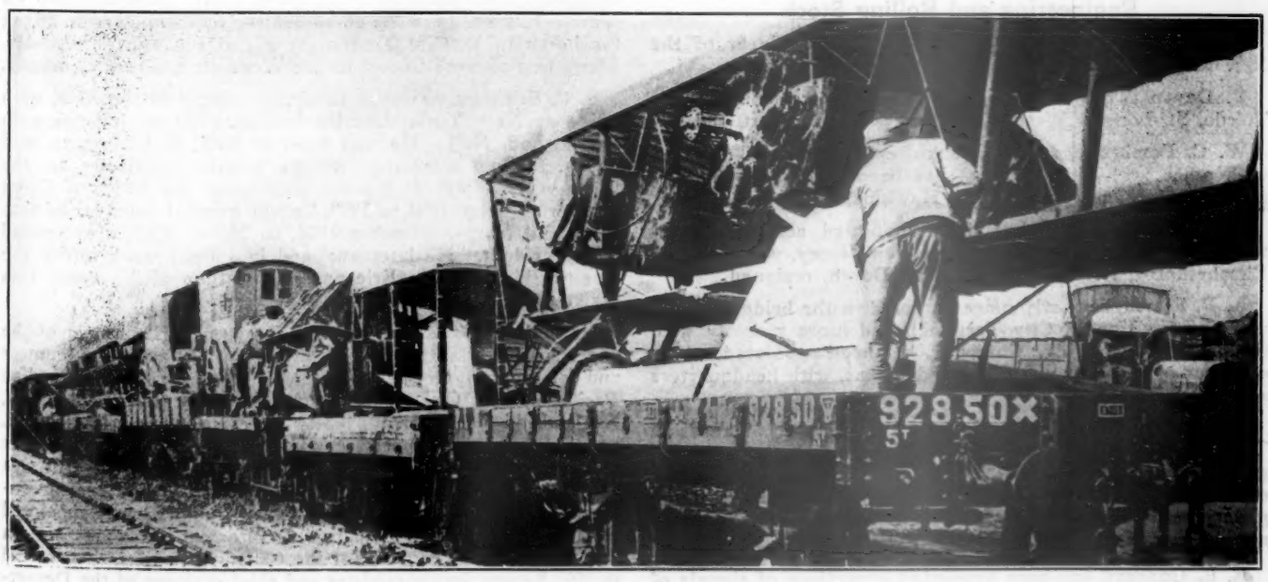
STATEMENT OF CANADIAN PACIFIC RAILWAY PENSION DEPARTMENT TO DECEMBER 31ST, 1917.

Balance to December 31st, 1916	$609,887.85
Amount contributed by Company	500,000.00
Amount received as interest	37,566.91
	$1,147,454.76
Payment of Pension Allowances for year	257,147.00
Balance in Cash and Investments	$890,307.76

NUMBER ON PENSION ROLL AT DECEMBER 31st, 1917.

Under 60 years of age	48
Between 60 and 70 years of age	439
Over 70 years of age	362
Total	849

[Adv.]



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Sending Aeroplanes Back for Repairs

Railway Officers

Executive, Financial, Legal and Accounting

H. G. Strode has been appointed auditor of the Pittsburgh & West Virginia and the West Side Belt, with office at Pittsburgh, Pa., vice **F. J. Brummer** resigned.

Operating

G. W. Nelson has been appointed superintendent of dining cars of the Northern Pacific, with headquarters at St. Paul, Minn., vice **H. J. Titus**, resigned to go into other business.

E. L. Gamble, general agent of the Western Pacific at Stockton, Cal., was appointed manager, in charge of operation and traffic of the Tidewater Southern, with same headquarters, succeeding **W. C. Peck**, resigned.

A. D. Parsons, assistant superintendent of terminals of the Erie, with office at Jersey City, N. J., has been appointed superintendent of the Wyoming division, with headquarters at Dunmore, Pa., succeeding **J. W. Foote** who is now in the United States service in the engineering department.

F. A. Rutherford, trainmaster of the Grand Trunk, with office at Durand, Mich., has been appointed inspector of transportation, with headquarters at Montreal, Que., and **T. J. Wrennich** has been appointed superintendent of terminals, with office at Black Rock, N. Y., in place of **T. W. Saunders**, resigned to take service with another company.

E. L. Wise, trainmaster of the Louisville & Nashville, has been promoted to assistant superintendent with headquarters at Ravena, Ky.; **J. H. Fish**, assistant trainmaster of the same road at Earlington, has been promoted to trainmaster, succeeding Mr. Wise, and **Steve Mothershead**, general yardmaster at Earlington will become assistant trainmaster.

Traffic

William Fitzgerald, assistant general freight agent of the Chesapeake & Ohio, the Chesapeake & Ohio of Indiana and the Chesapeake & Ohio Northern, with office at Chicago, having been transferred to Richmond, Va., in the same position, **H. P. Hathaway** will, in addition to his duties as general agent of the Kanawha Dispatch and the Blue Ridge Despatch Fast Freight Lines, act as general agent of these companies; effective March 15.

Engineering and Rolling Stock

C. S. Henning has been appointed chief engineer of the New Mexico Central, with office at Santa Fe, N. M.

T. Devaney has been appointed master mechanic of the Toledo, St. Louis & Western, with office at Frankfort, Ind.

W. C. Pembroke, assistant engineer of the Coal & Coke, with office at Elkins, W. Va., has been appointed engineer maintenance of way, vice **W. C. Hawkins**, resigned.

Thos. B. Dickerson has been appointed acting superintendent of shops of the Central of New Jersey, with office at Elizabethport, N. J., vice **G. L. Van Doren**, resigned.

A. R. Eitzen, formerly office engineer in the bridge department of the Kansas City Terminal, and more recently with the Kansas City Bridge Company, has been appointed bridge engineer of the Missouri, Kansas & Texas, with headquarters at Dallas, Tex.

J. W. Peck, signal supervisor of the Missouri, Kansas & Texas, with headquarters at Waco, Tex., has been appointed general signal inspector, of the Chicago Great Western, with office at Chicago, succeeding **W. J. Mullins**, who has entered government service. **J. A. Murrell**, signal foreman, has been appointed supervisor to succeed Mr. Peck.

E. E. Goddard has been appointed supervisor of signals of the St. Louis division, of the Illinois Central, with headquarters at Carbondale, Ill., succeeding **P. G. Pendorf**, who has resigned to accept a position with the sales department of the Buda Company, with headquarters at Chicago. **A. H. Keller** was apponted supervisor of signals, with headquarters at Champaign, Ill., to succeed **R. J. Frost**, resigned. The above changes were effective March 16.

R. N. Clark, assistant engineer on the Missouri Pacific, has been promoted to assistant engineer in the office of the engineer maintenance of way, at Kansas City, Mo., succeeding **C. A. Hewes**, who becomes assistant engineer of the Kansas City Terminals. **E. H. Hawkins**, assistant engineer of the South Kansas division, with headquarters at Coffeyville, Kan., has been transferred to the North Kansas division, succeeding Mr. Clark. **R. H. Hallsted**, assistant engineer of the Kansas City Terminal, becomes general roadmaster of the Omaha division with headquarters at Falls City, Neb., succeeding **C. O. Congdon**. **R. P. Hayes** has been appointed assistant engineer of the Joplin division and **Mr. Freeland** has been appointed assistant engineer of the South Kansas division, succeeding **Mr. Hawkins**.

Purchasing

Thomas Spratt, assistant purchasing agent of the Norfolk & Western, with office at Roanoke, Va., will perform the duties of purchasing agent.

Railway Officers in Government Service

C. A. Lahey, assistant general freight agent of the Chicago, Milwaukee & St. Paul at Chicago, has been appointed assistant director of transportation of the Food Administration, with headquarters at Washington.

F. A. Bushnell, purchasing agent of the Great Northern, has been appointed a member of the western regional purchasing committee, in place of **Ira O. Rhoads**, of the Southern Pacific.

Obituary

W. L. McWhirter, division freight agent of the Atchison, Topeka & Santa Fe, Texas Lines, with headquarters at Fort Worth, Texas, died in that city on January 7.

C. J. Kulp, treasurer of the Lehigh Valley, with office at Philadelphia, Pa., died at his home in that city on March 23 at the age of 55. He was born in Philadelphia, and entered the service of the Lehigh Valley in 1887 as a clerk in the accounting department. In 1910 he became assistant treasurer, and since 1915 had been treasurer of the road.

Francis Fisher Flagg, first vice president of the American Express Company, and president of the National Express company, with office at New York, until his resignation on March 1, 1918, because of ill-health, died on March 26, at his home in Pelham Manor, N. Y., at the age of 67. Mr. Flagg was also a Director of the Westcott Express Company.

S. C. Stickney, assistant to vice-president of the Erie, with office at New York, died on February 20, at his home in Englewood, N. J. He was born in 1865, in Minnesota, and began railway work in 1886 as locating engineer on the Chicago, St. Paul & Kansas City, now the Chicago Great Western. From 1894 to 1909, he was general manager of that road, and from September 1905, to March 1909, also second vice-president. He later engaged in special work under the vice-president of the Erie and at the time of his death was assistant to vice-president of that road.

Sir Collingwood Schreiber, for 12 years chief engineer of the department of railways and canals of the Canadian government and for several years before that chief engineer of the Canadian Pacific, died at Ottawa on March 23. He was born in Essex, England, on December 14, 1831. He came to America in 1852, and his first railroad service was as assistant engineer on the Hamilton & Toronto, now a part of the Grand Trunk. This was from 1852 to 1855. In 1860-1862 he was superintending engineer of the Northern Railway, Canada; in 1873 was appointed chief engineer of the Canadian Government Railways, and in 1880 became chief engineer of the Canadian Pacific. From 1893 to 1905 he was deputy minister and chief engineer of the Department of Railways and Canals. He had also served as superintendent of construction on the Grand Trunk Pacific.

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